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Addressing Unmet Need: Potential for Increasing Contraceptive Prevalence in the Philippines 5

Lack of knowledge and cultural or personal objections prevent women from using contraceptives even if they want to space or limit their pregnancies, thus leading to an unmet need for contraception. Utilizing secondary data from 4,129 ever-married women included in the 2000 Reproductive Health (RH) Baseline Surveys, this article examines the relationship between selected psychosocial factors and unmet need. After controlling for the effects of attitude, a low level of knowledge was significantly associated with either unmet need for spacing ($p<0.001$) or limiting ($p<0.001$). By contrast, after controlling for the effects of age, the number of living children, knowledge and access to family planning services, the association of negative attitude with unmet need was modified by educational level. In comparing women with a negative attitude to those with a positive one, the adjusted odds ratio of having unmet need for spacing (OR=3.8, 90 per cent CI=2.0-7.3) and unmet need for limiting (OR=2.2, 90 per cent CI=1.2-4.0) was found to be highest among those with low levels education. Meanwhile, no association existed between attitude and unmet need among women with tertiary education.

These findings can be used to help family planning programme managers design and implement an effective unmet need strategy in the Philippines that targets subgroups of women with the highest priority. Accordingly, strategies should increase knowledge about modern contraceptives and facilitate attitudinal change towards family planning, particularly among women who do not attain a higher education.

Below Replacement to above Replacement: Increased Fertility and its Determinants in Sri Lanka 27

During the period from 1995 to 2000 Sri Lanka achieved a fertility level below replacement, identified by a total fertility rate (TFR) of 1.9. Yet the most recent survey data from the Sri Lanka Demographic and Health Survey (SLDHS, 2006/2007) indicates a TFR of 2.3, an increase in fertility well above the replacement level. Within the developing world, no single country has shown this kind of fluctuation in TFR once it has reached a level below that of replacement.

In Sri Lanka, deferment of the age at marriage curtailing the reproductive age span in marriage, particularly in females, high use of contraception, and the practice of induced abortion have all been noted as key contributory factors to the declining trend in fertility below the replacement level. When fertility increased well above this level, the same key contributory factors had also changed to favour increasing fertility and culminated in a significantly reversed trend.

The period of reduced fertility also resulted in a slowing down of the family planning activities of the State, private and civil sectors. Coupled with the dissemination of pro-natalistic discourses, Sri Lanka experienced a decline in the demand for contraceptives and service delivery, and unplanned conceptions were more likely to result in childbirth.

The Effect of Remittances on Return Migration and its Relation to Household Wealth: The Case of Rural Thailand 53

This paper examines the effect of remittances on return migration, as it relates to household wealth. Using longitudinal data from Nang Rong, an agrarian district located in Thailand's north-eastern region, the authors find that migrants' sending of remittances is positively related to return migration, but only when the amounts remitted are small. The authors argue for a signaling motive whereby the migrant sends money to the household to keep open the return option by maintaining membership rights in the origin household. They also find that the relationship between remittances and return migration only exists for migrants from households in the middle of the wealth continuum. Remittances from migrants of poorer and wealthier households are not related to return.

Differences between households at various levels of wealth may reflect the need for remittances, intentions to return, a need for co-insurance, or the absence of a household strategy altogether. Findings from this paper suggest that, while a household economics approach may be more practical in describing strategies pursued by rural-to-urban migrants in developing countries, theorists and policymakers may need to pay more attention to the different types of motivations followed by migrants and households at various points on the wealth continuum. Future work needs to be done to determine what types of migration motivations are undertaken by poorer households.

Also, policymakers should notice that only a small number of migrants return. Therefore, policy efforts should focus on helping migrants at their destination, especially if they are living in slum housing or working in hazardous occupations, which may require better access to medical care.

Determinants of Living Arrangements of Elderly in Orissa, India: An Analysis

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Very few studies have been conducted on older persons in India, although they are the fastest growing elderly population in the world. Joint family systems are on the decline in India and more families are becoming nuclear in size and orientation. Given this background, it is important to explore the current nature of older persons' living arrangements and their determinants. The present paper analyses the socio-economic and demographic correlates of the living arrangement choice of older persons in the state of Orissa.

Data for the present work are drawn from the 60th round of the National Sample Survey on the elderly for Orissa. The total sample size for Orissa is 1,238 older persons: 660 males and 578 females. Both bivariate and multivariate techniques with Pearson's chi-square test statistics were used for the analysis. The majority of older persons (51.5 per cent) were living with their spouse and children; roughly one third were living without spouses but with children and another small proportion (2.5 per cent) were living with other relatives and non-relatives. The major demographic factors that determined the living arrangements of older persons considered in this study were age, sex, marital status and surviving children, while socio-economic factors were place of residence, education, caste, income and economic dependency. These variables play an important role in determining the living arrangements of older persons in Orissa.

In considering the country's changing socio-economic and demographic scenarios, increasing levels of education and income along with a decline in fertility, it seems very likely that an increasing proportion of older persons in India will be living alone in the future. Related policies and programmes will have to take this reality into account in order to effectively address the specific needs of those older persons living alone.

Addressing Unmet Need: Potential for Increasing Contraceptive Prevalence in the Philippines

One of the overriding goals of a family planning programme should be to increase women's knowledge regarding family planning and their reproductive health. Highest priority should be given to women with low levels of knowledge, such as those who did not reach secondary school.

By Paulyn Jean B. Acacio-Claro and Maridel P. Borja*

Sample surveys carried out during the last four decades have proven the existence of "unmet need", a term coined to describe a significant gap between a woman's sexual and contraceptive behaviour and her stated fertility preference. According to the Demographic and Health Surveys (DHS) definition, a woman has an unmet need for contraception if she is fecund, sexually active and not using any contraceptive method, and yet does not want a child for at least two years. If a woman is pregnant or amenorrhoeic after giving birth, she is also considered to have had an unmet need if she had not wanted the pregnancy or birth either when it occurred or ever (Ross and Winfrey, 2002).

Although the definition of unmet need has been adjusted to take into account only modern method use, including various health dimensions and unmet need among unmarried women and men, its

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measurement is still based on the same underlying concept, which is the identification of the pool of non-users of contraceptives who are capable of conceiving, who are exposed to the risk of pregnancy and who wish to avoid or postpone pregnancy (DeGraff and de Silva, 1996).

An estimated 105.2 million married women in the developing world have such an unmet need (Ross and Winfrey, 2002). Asia accounts for the highest proportion of women with unmet need. In the Philippines, almost one fifth of currently married women of reproductive age have unmet need, with 9.4 per cent of them having unmet need for limiting births and 7.9 per cent having unmet need for spacing births (National Statistics Office, 2003).

The magnitude of unmet need, either for spacing or limiting births, varies substantially according to the demographic and social characteristics of women. The most prominent of these are age, number of living children, residence, education and socio-economic status (Chaudhury, 2001). Researchers found that women cited a range of obstacles that prevented them from using contraceptives. Prominently cited obstacles include lack of knowledge about contraception, health concerns, high costs, limited supplies and cultural or personal objections. Some women also give conflicting answers to different survey questions about their fertility preferences, which may reflect ambivalence or uncertainty about childbearing and reproductive intentions (Robey, Ross and Bhushan, 1996).

Various articles in the literature have underscored the demographic significance of meeting unmet need in addition to enhancing individual health and rights. However, evidence shows that the level of unmet need remains high in the developing world. Thus, with less than a decade remaining to accomplish the International Conference on Population and Development (ICPD) benchmark of zero unmet need in 2015, it is imperative for programmes to develop specific responses that address the barriers to contraceptive use.

Most research on unmet need to date has concentrated on issues of definition and measurement. While many studies have explored the causes of unmet need using data from large-scale surveys, there is a scarcity of local in-depth qualitative and quantitative research on the factors that could help provide planners with important information in order to strengthen family planning programmes.

Some local studies have been conducted to estimate the level of unmet need for contraception in the Philippines but those have used the standard definition. This article varies, specifically in that it focuses on unmet need for modern contraception and provides a comprehensive, quantitative study, which is aimed at identifying factors associated with either unmet need for spacing or unmet need for limiting. In particular, the present study measures the relationship between unmet need and women's knowledge regarding birth control and its source, and attitudes towards birth control. It is also aimed at determining the factors that confound or modify the effect of knowledge and attitude regarding unmet need.

Results of this study can be used to identify subgroups of women with unmet need and provide family programme planners with valuable inputs for the formulation and implementation of targeted strategies for meeting the demand for contraception of women with varying needs.

Methods

Study site and design

This study involved further analysis of secondary data derived from the 2000 Reproductive Health-Family Planning Baseline Surveys conducted nationwide in 16 provinces by the College of Public Health of the University of the Philippines-Manila for the Department of Health and the United Nations Population Fund (UNFPA). The provinces were selected based on the following criteria: geographic representation for the three major islands in the country – Luzon, Visayas and Mindanao; their physical contiguity with each other; size of the beneficiary population and magnitude of reproductive health needs; performance in the last UNFPA Country Programme; and political support from local authorities. The said baseline surveys assessed various target populations using pre-tested and validated interview schedules and guided self-administered questionnaires.

The sampling design used was a stratified two-stage systematic cluster sampling. The *barangays*[1] which served as the primary sampling units (PSU) were first stratified according to urban-rural location and according to presence or absence of community-based interventions. However, the sampling frame for PSUs excluded the barangays that were very inaccessible or had peace and order problems. The number of *barangays* drawn from each stratum was proportional to the distribution in the province. Overall, 171 *barangays* were included in the three reproductive health surveys.

In each *barangay* included, sample households, the secondary sampling units, were selected using a systematic random sampling design. A sample of 12,229 households representing the provinces included was drawn. Target respondents were interviewed from those sampled households.

Study population

The present study included ever-married women aged 15 to 49 years who were currently married or living with a man at the time of interview. Those who were either menopausal or not fecund[2] or had undergone hysterectomy or had indicated a desire to have children were excluded because they were not at risk of having unmet need. After satisfying the said inclusion and exclusion criteria, and after assessing for completeness of information and consistency of responses, there were 4,129 eligible participants for the study.

Variables

The outcome (dependent) variable in this study was unmet need for modern contraception (based on standard definition) categorized as either unmet need for spacing or unmet need for limiting. Two main exposure (independent) variables were considered, namely, attitude towards birth control and knowledge regarding birth control methods and their sources.

A scoring system was used to compute a knowledge index based on knowledge of the various types of contraceptive methods and awareness of sources of contraceptives. Awareness of modern methods was given higher points, i.e., a score of three points was given for every modern method identified spontaneously by the respondents while two points were given for every modern method identified only after probing. By contrast, a score of two points and one point was given for every traditional method identified spontaneously and after probing, respectively. Another one point was given if the respondent knew the source of the contraceptive method that she recognized either spontaneously or after probing. Scores greater than or equal to the median score were considered to reflect a high level of knowledge while those below the median score were considered low level. The highest possible score using this system was 34.

A scoring system was also used to compute for an attitude index. One point was given for every positive answer by the respondent when asked whether or not the Government should provide contraceptives as one of its services and whether or not provision of family planning messages on mass media were acceptable. Another one point was given if the respondent answered "both" or "either" to the question, "Who do you think ought to use a method; is it you or your spouse/partner?" A score of two to three points indicated a positive attitude towards birth control, while a score of less than two points indicated a negative attitude towards birth control.

Other variables collected because of their potential to confound or modify the effect of knowledge and attitude were the respondent's sociodemographic characteristics, such as age as of the last birthday, highest level of education completed, place of residence based on whether the area was classified as urban or rural by the National Statistics Office, number of living children, religion and socio-economic status. The respondent's access to family planning services, which referred to her perception on how long it takes to travel from one's home to the source of contraceptive method (if current user), or duration of travel from one's home to the nearest family planning source (if non-user), was also measured.

The socio-economic status of the respondent was determined by an asset index based on the one used by the Demographic and Health Surveys/World Bank to measure socio-economic status in the absence of income and expenditure data (Filmer and Pritchett, 1998). The said index has been found to be an accurate proxy for household "wealth" (Demographic and Health Surveys Project, 2002). The asset variables used in this study were composed of household ownership of certain consumer durables, such as electricity, radio, television, video equipment, gas or electric range, refrigerator, bicycle, motorcycle, jeepney,[3] private car and telephone. Variables were also included which indicated the source of drinking water and type of toilet facility of the household.

Data processing and analysis

The present study utilized recorded data from face-to-face interviews of ever-married women regarding their household assets, personal characteristics, pregnancy history, fertility and fertility preferences, as well as knowledge, attitudes and practices on contraception. Relevant variables were first extracted from the various data collection tools used in the Baseline Surveys and then merged into a single database using the Epi Info 6 software package. Range checks and frequency distributions were done to ensure the completeness and accuracy of the data.

In this study, principal components analysis (PCA) was employed to determine the household asset index, which was used to measure socio-economic status. PCA is a statistical procedure that simplifies the description of a set of interrelated variables (Afifi and Clark, 1990). The value of the household asset index was calculated by summing the score on each variable across all the variables included in the PCA (Filmer and Pritchett, 1998). The subject population was then divided into quintiles - five categories, from the poorest 20 per cent to the richest 20 per cent - on the basis of wealth as calculated by the said asset index (Rani and Lule, 2004).

The selection process for model building began with a crude analysis of each variable to check the nature and strength of association of knowledge and attitude with unmet need and to screen for probable confounders. A probable confounder is a variable that showed statistical significance at the 25 per cent level on crude analysis. This cut-off value was chosen in order to avoid the exclusion of variables, which may be weakly associated due to the confounding of other variables.

Next, stratified analysis was conducted to identify initially the potential effect measure modifiers (EMMs), namely, variables across which the effect measure differs. Probable effect measure modification or statistical interaction was examined using Woolf's test of homogeneity. The level of significance that indicated probable effect measure modification was set at 10 per cent. Stratum-specific odds ratios on opposite sides of the null were likewise considered as an indication of probable statistical interaction even if there was no statistical significance at 10 per cent level.

Since the literature presented limited data on EMMs for the association between unmet need and the exposure variables of interest, only factors that could logically interact with these exposure variables were screened. In this study, the interaction terms that were explored were accessibility of the family planning service with knowledge of birth control methods, and source and respondent's educational attainment with attitude towards birth control.

Since studies had shown that the correlates of unmet need for spacing varied from the correlates of unmet need for limiting, unmet need had to have three categories, with women having no unmet need serving as the reference category. Thus, polytomous (having more than two categories) logistic regression was employed to model the relationship between a polytomous outcome variable and a set of covariates accounting for confounding and effect measure modification of extraneous variables.

Two models were developed for this study, the first one with knowledge as the exposure variable; the second one with attitude as the exposure variable.

The model that includes the exposure variable of interest, the probable EMM identified in the stratified analysis and their interaction, was used to assess effect measure modification. An interaction term statistically significant at 10 per cent was considered an EMM and was retained in the model.

Subsequently, confounders were assessed using a backward stepwise selection starting with the "full model". The full model included the independent variable plus all probable confounders, significant EMM and the interaction term identified previously. The probable confounder with the largest p-value on Wald's test was the first to be removed from the model. Confounding by a particular variable was determined by comparing the odds ratio (OR) derived from the reduced model (i.e., the crude OR) to the odds ratio of the full model (i.e., the adjusted OR). If the relative change in the odds ratio was 10 per cent or more (change-in-estimate criterion), then the variable was considered a confounder and was retained in the model. Otherwise, it was deleted (Rothman and Greenland, 1998). In the presence of a significant EMM, stratum-specific odds ratios were evaluated for confounding. The process of deleting insignificant confounders continued until none could be deleted from the model.

The final model consisted of the dependent and independent variables plus the significant confounders and EMM. The odds ratios, obtained through exponentiation of the estimated coefficients from each logit function, and 90 per cent confidence interval (CI) estimates were presented to describe effect measures. The 90 per cent confidence level was used instead of the usual 95 per cent level because the former estimates approximate results of exact methods more closely (Rothman and Greenland, 1998). Stratum-specific odds ratios were calculated when an EMM was included in the final model.

Results

Sociodemographic profile and other relevant characteristics of respondents

A total of 4,129 women in the reproductive age group, who were either married or in consensual live-in relationships, were included in this study. Table 1 shows the distribution of these women according to sociodemographic characteristics. With a mean age of 33 years, almost half (42 per cent) of these women were in their early to late thirties. By contrast, very few (2 per cent) were aged less than 20 years. These women had three living children on

Table 1. Distribution of respondents according to sociodemographic characteristics

Sociodemographic characteristics	Number	Percentage
Age in years (N=4 129)*		
Less than 20	81	2
20-29	1 456	35.3
30-39	1 748	42.3
40 years and older	844	20.4
Number of living children (N=4 127)*		
0-1	627	15.2
2-4	2 515	60.9
5 and more	985	23.9
Education (N=4 124)*		
None/primary or lower	1 205	29.2
Secondary	1 856	45
Tertiary or better	1 063	25.8
*Place of residence (N=4 129)**		
Urban	1 347	32.6
Rural	2 782	67.4
Religion (N=4 112)*		
Catholic	2 957	71.9
Non-Catholic	1 155	28.1
Travel time to access family planning services (N=3 785)*		
Less than 15 minutes	2 911	70.5
16-45 minutes	654	15.8
45 minutes and over	564	13.7

* Total may differ due to missing values.

average with three fifths of them having two to four children. The highest number of living children recorded was 14. Over 70 per cent of these women had a secondary or higher education. More than two thirds of the respondents (67 per cent) lived in rural areas. The sample was also predominantly Catholic. More than 70 per cent of the respondents had access to family planning services within 15 minutes or less. However, more than a tenth (14 per cent) had to travel for more than 45 minutes to access family planning services. In general, their mean travel time was about 18 minutes.

The majority of respondents (68 per cent) had electricity in their households. The most common household asset owned was a radio (73 per cent) while the least common was a telephone (3 per cent) (see figure 1). At least one quarter had access to piped water as their main source of drinking water while three quarters of the respondents had flush-type toilet facilities in their households. A small proportion of respondents reported ownership of motorized vehicles (figure 2).

Figure 1. Percentage of respondents according to ownership of household assets

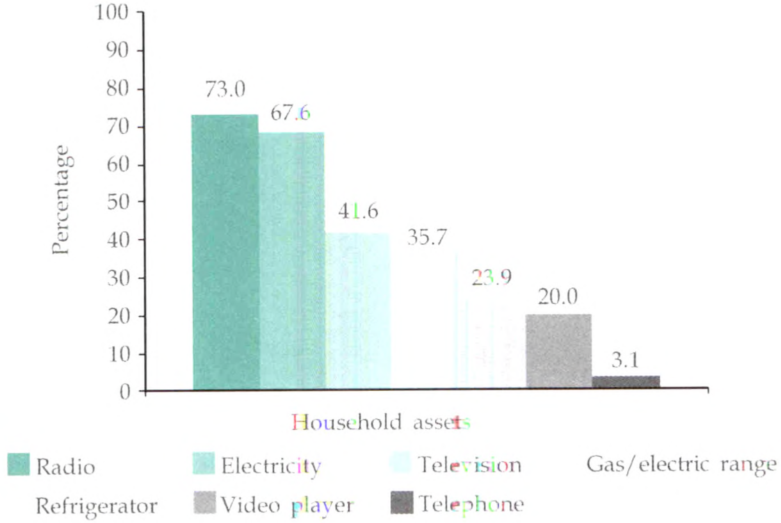
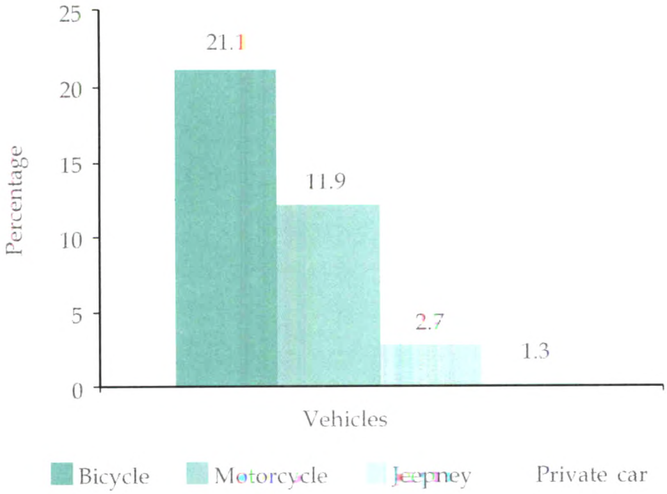


Figure 2. Percentage of respondents according to ownership of vehicles



The principal components analysis conducted to calculate a household asset index as a measure of socio-economic status yielded negative standardized weights for possession of radio, television and gas/electric range and also for having access to electricity, piped water and flush toilet. This was apparently due to the fact that large proportions of women had access to these amenities. By contrast, owning a jeepney, car or telephone had greater positive weights. The sign of the standardized weight would indicate the contribution of the particular household asset in the calculation of the index and consequently in the measurement of wealth. Based on the values of the household asset indices, a quintile distribution of respondents was obtained. Using the classification of Filmer and Pritchett (1998), women belonging to the first and second quintile, the third and fourth quintile, and the fifth quintile were considered to be poor, middle-class and rich, respectively. Table 2 presents the distribution of respondents according to their socio-economic status classification.

Table 2. Distribution of respondents according to socio-economic status classification

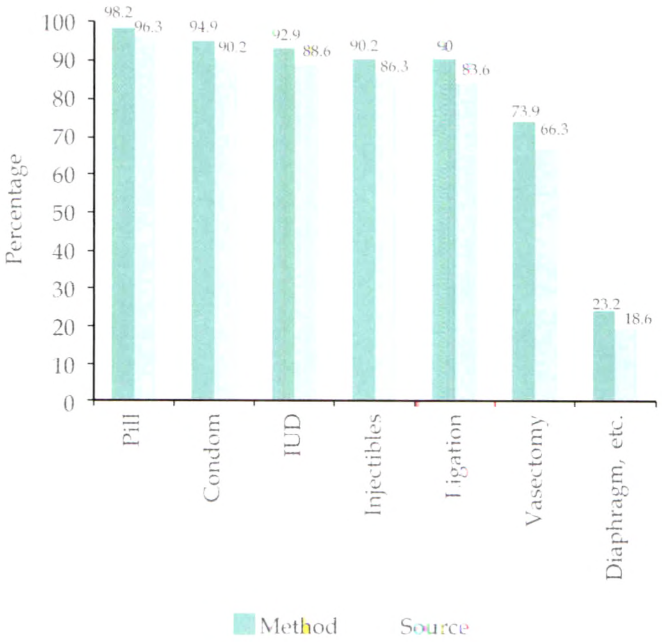
Socio-economic status classification*	Number	Percentage
Poor	1 576	38.17
Middle	1 745	42.26
Rich	808	19.57
	4 129	100.00

* Based on classification by Filmer & Pritchett (1998).

The most popularly known modern contraceptive methods were the pill, condom and IUD (intrauterine device). The least known were vaginal methods, such as the diaphragm, foam, jelly or cream. A similar trend can be observed regarding women's awareness of the sources to procure the above-cited birth control methods (see figure 3). Awareness of natural methods, such as calendar rhythm/periodic abstinence (83 per cent) and withdrawal (90 per cent), appeared to be high except for fertility-based methods such as basal body temperature, which was recognized by only 38 per cent of the women.

Women believed that the onus of contraception had to rest on them, either alone (41 per cent) or in collaboration with their partners (42 per cent). Nearly all (98 per cent) of the women were of the opinion that a government health centre should provide family planning/contraceptives as one of its services. The overwhelming

Figure 3. Percentage of respondents aware of specified contraceptive methods and their sources



majority (96 per cent) also found it acceptable for family planning information to be provided on the radio or television. Based on the scoring system devised, almost all of the respondents (96 per cent) had a positive attitude towards contraception.

Among fecund women who should have used contraception, since they either believed that they had completed their desired family size or wished to delay their next pregnancy for at least another two years, 46 per cent had unmet need for modern contraception. Among those, 36 per cent had unmet need for limiting births while 10 per cent had unmet need for spacing births. Table 3 shows that women with low levels of knowledge and those with negative attitudes had higher levels of unmet need for modern contraception as compared with women having high levels of knowledge and a more positive attitude. The discrepancy in unmet need was much greater for spacing than for limiting.

Analysis of association between exposure and outcome variables

Among all variables considered as probable confounders, only attitude actually distorts the observed association between level of

Table 3.1. Percentage of unmet need according to the level of knowledge of respondents

Knowledge	Number	Percentage	Percentage of unmet need for spacing	Percentage of unmet need for limiting	Percentage without unmet need	Total
Low level	1 682	40.7	14.3	38.3	47.4	100
High level	2 447	59.3	8	34.3	57.7	100
Total	4 129	100				

Table 3.2. Percentage of unmet need according to the attitude of respondents

Attitude	Number	Percentage	Percentage of unmet need for spacing	Percentage of unmet need for limiting	Percentage without unmet need	Total
Negative	151	3.7	15.2	52.3	32.5	100
Positive	3 978	96.3	9.8	35.3	54.9	100
Total	4 129	100				

knowledge and unmet need for spacing and limiting. Results show that after controlling for the effect of attitude, a low level of knowledge about birth control and source is significantly associated with both unmet need for spacing (p<0.001) and unmet need for limiting (p<0.001). The risk of having unmet need for spacing births among women with a low level of knowledge was 1.8 times higher than among women with high level of knowledge. Meanwhile, the odds ratio for unmet need for limiting is 1.3 (90 per cent CI=1.2-1.4).

Based on the algorithm described previously, the variables included in the second final polytomous logistic regression model include age, number of living children, knowledge and access to family planning services as confounders for the association between negative attitude and unmet need for spacing and limiting. Education proved to be a significant EMM since the association of attitude with unmet need varied with level of educational attainment.

While attitude was not associated with unmet need for spacing and limiting among women who attained a college level of education, an association existed among less educated women (table 4). Among

Table 4. Stratum specific odds ratio estimates for association of negative attitude with unmet need for spacing or limiting births by level of education

Effect modifier	Unmet need for spacing			Unmet need for limiting		
	OR	90 per cent CI	p-value	OR	90 percent CI	p-value
Education						
None/primary	**3.81**	**1.98-7.33**	**0.001**	**2.07**	**1.29-3.32**	**0.024**
Secondary	2.2	0.86-5.63	0.166	**2.22**	**1.24-3.98**	**0.012**
Tertiary	0.99	0.26-3.74	0.991	0.94	0.44-2.01	0.888

Abbreviations: OR = odds ratios; CI = confidence interval.

women who had only a primary level of education or no education at all, the odds of having unmet need for spacing were significantly higher for women with a negative attitude towards birth control compared with those with a positive attitude (p=0.001). The said odds were shown to be two to seven times higher (OR=3.8, 90 per cent CI=2.0-7.3) in this group compared with their counterpart with a positive attitude. Although the odds ratio was not statistically significant among women who attained a secondary level of education, it was greater than two and could be as high as six (OR=2.2, 90 per cent CI=0.9-5.6).

The odds of having unmet need for limiting were also significantly higher for women with a negative attitude towards birth control as compared with those with a positive attitude (p=0.024). Specifically, the odds ratio is 2.1 (90 per cent CI=1.3-3.3) among women with only a primary education or no education at all. The odds were also statistically significant at 2.2 (90 per cent CI=1.2-4.0) among women who reached the secondary level of education.

Discussion

Magnitude of unmet need

The estimated proportion of women with unmet need for both spacing and limiting from this study was markedly higher (36 and 10 per cent, respectively) than that obtained by the country's National Statistics Office (NSO) (8 and 9 per cent, respectively). This may be partly attributed to the differences in inclusion criteria for the definition of unmet need that were used by NSO and the present study. While NSO (using the DHS definition of unmet need) included those "who are not using any method of family planning", this study was stricter in identifying women with unmet need and included all non-users of contraception plus women using natural methods, because natural methods had been shown to have high contraceptive failure and discontinuation rates (Robey, Ross and Bhushan, 1996). Moreover, a local study has also shown that these may be responsible for many unwanted pregnancies (Laguna and others, 2000). Thus, the figures reported by NSO may actually be an underestimate of the true situation in the country.

Correlates of unmet need for contraception

This study found that both knowledge and attitude are associated with unmet need. It is important to note, however, that these variables could be subject to temporal ambiguity -- an inherent limitation of cross-sectional studies where there is no assurance that the exposure variables actually preceded the outcome. It could be assumed though that there has been no change in knowledge and attitude prior to the conduct of the survey and measurement of unmet need.

Attitude was found to statistically confound the association between a low level of knowledge and unmet need for spacing. Studies have shown that women with unmet need are less likely than contraceptive users to approve of contraception (Bhushan, 1997; Casterline, Perez and Biddlecom, 1997; Govindasamy and Boadi, 2000). They were also consistently more likely to disapprove of the provision of family planning information through broadcast media than women who use contraceptive methods (Pasha, Fikree and Vermund, 2001). Hence, not adjusting for the effect of attitude in this study would increase the odds of having unmet need for spacing among women with a low level of knowledge.

In the association between negative attitude and unmet need, the respondent's age was found to be a confounder. It has a negative relationship with unmet need for spacing and a positive relationship with unmet need for limiting (Brophy, 1990; Klijzing, 2000; Robey, Ross and Bhushan, 1996). This is expected because younger women want to have more children, while older women have achieved their desired number of children (Chaudhury, 2001).

The variable, number of living children, also confounded the association of negative attitude and unmet need for spacing births. Women with fewer living children are more interested in contraception for spacing than women with high parity as the latter are more concerned with limiting births.

Knowledge was another variable found to confound the relationship of attitude and unmet need. A study using DHS data from Egypt showed that women who knew of more contraceptive methods were less likely to have unmet need. In the Republic of Korea in 1974, 85 per cent of the women who did not know where to obtain contraceptives had unmet need (Robey, Ross, Bhushan, 1996). Indeed, a low level of knowledge on birth control and sources of contraceptives would predispose a woman to have unmet need.

Likewise, accessibility of family planning services confounded the association between attitude and unmet need. Bongaarts and Bruce (1995) showed that contraceptive prevalence declines as distance to family planning facilities lengthens. Chaudhury (2001) also reported that among women with unmet need in several South Asian countries, lack of access to contraceptive methods is one of the major barriers to contraceptive use.

If this study had not controlled the confounding effect of all these variables, an over- or underestimation of the odds ratio for either unmet need for spacing for limiting may have resulted. Yet, even though confounding variables were controlled, residual confounding could still have occurred owing to a misclassification. This control by age, number of living children and access to family planning services depends on accurate information and, since some misclassification of the relevant information resulted when these continuous variables were grouped into discrete categories, some residual confounding remains.

Uncontrolled confounding may also have occurred because there were other factors that studies have shown to be associated with unmet need but were not analysed in this study due to inherent limitations of the secondary data used. It is hoped that the negative and positive biases discussed above will balance each other out so that the result obtained is close to the true value of the odds ratio.

Several demographic surveys have documented that the most frequent reason given by women for not using contraceptives, regardless of whether they have a need to space or limit births, is a lack of knowledge about contraception. Bankole and Westoff (1995) found this factor to be prominently cited as reason for non-use of contraception in almost all sub-Saharan countries and in many others outside that region. They concluded that lack of knowledge is a critical cause of unmet need in countries with low contraceptive prevalence and even in some countries with high levels of contraceptive prevalence, such as Bolivia and Peru.

Although accessibility of family planning service was not found to be a significant EMM in this study, it could modify the relationship between knowledge and unmet need. Studies have pointed out that women with a high level of knowledge tend to have less unmet need probably because they know when and how to use contraception. However, in the absence of family planning services in their areas or because of inaccessible family planning facilities, the proportion of women with unmet need between those with high and low levels of knowledge may not differ significantly. Therefore, the hypothesized association between knowledge and unmet need may be modified at different levels of accessibility of family planning services.

As shown in this study, the effect of attitude on either unmet need for spacing or limiting was not the same for all levels of the respondent's educational attainment. This indicated the presence of statistical interaction between attitude and education. Assuming that this can be considered an actual biological interaction, results of this study suggest that a low level of education (secondary education or lower) combined with a negative attitude has a magnified effect on unmet need. Indeed, the most substantial effect of negative attitude on unmet need was seen among women with little or no education at all.

Govindasamy and Boadi (2000) found that women who were less likely to approve of contraception were those with unmet need who do not intend to use contraception in the future because they oppose its use. Hence, in the present study, it could be supposed that women with a negative attitude do not only disapprove of the provision of family planning information and services but also oppose modern contraceptive use. If a woman with a negative attitude has a high educational attainment, it could be surmised that she is knowledgeable about method mix and sources of contraceptives. According to Rutenberg and others (1991), there is a strong positive correlation between contraceptive knowledge and level of education. Thus, it follows that an educated woman with a negative attitude towards birth control, concedes her own opposition to contraceptive usage since she knows when and how to use contraception in order to space or limit births. On the contrary, women with a negative attitude and low level of education are more inclined to avoid contraceptive use regardless of need for contraception.

The significant association between negative attitude and unmet need among women with secondary education indicates that contraceptive information could not have been provided or that contraceptive knowledge is limited in this group. This may be due to the fact that in the country, family planning has yet to be comprehensively integrated in the educational system, especially at the secondary school level. It appears that the greatest barrier to addressing unmet need is negative attitude and a low educational level, implying that attitudinal change and education of women should be given priority by family planning programmes in order to effect behavioural change.

Indeed, one of the overriding goals of a family planning programme should be to increase women's knowledge regarding family planning and their reproductive health. Highest priority should be given to women with low levels of knowledge, such as those who did not reach secondary school. Target areas of information, education and communication (IEC) strategies should provide information about the different modern contraceptive methods and their sources. Moreover, a component on attitudinal change should be included in programmes to replace negative social and cultural attitudes and outdated norms about family planning and reproductive health. Mass media can be used to highlight the economic advantages and health benefits of contraceptive use for spacing and limiting births, thus, promoting a positive image of family planning and contraception and creating and reinforcing positive social norms.

Educational intervention on reproductive health and family planning should also be introduced in secondary schools. This recommendation could serve as a strong justification for local governments to give priority to the Adolescent Reproductive Health (ARH) programme of the Department of Health. Currently, ARH is one of the service deliverables of the Department's Second Women's Health and Safe Motherhood Project where ARH-related activities are being subcontracted to non-governmental organizations since there is no clear approach yet on how to package ARH. Institutionalizing ARH may yet be the best way, as suggested by the findings brought forward by this study.

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Endnotes

[1] The National Statistical Coordination Board (2010) of the Philippines defines a "barangay" as the smallest political unit into which cities and municipalities in the Philippines are divided. It is the basic unit of the Philippine political system. It consists of an area with fewer than 1,000 inhabitants residing within the territorial limit of a city or municipality and administered by a set of elective officials, headed by a *barangay* chairman *(punong barangay)*.

[2] A fecund respondent is a woman who has not been ligated, has regular sexual activity with her partner and has been pregnant. If she has regular sexual activity but has never been pregnant, she should have been married/living together with her husband/partner for a period of fewer than five years (based on operational definition used by Govindasamy and Boadi, 2000).

[3] A "jeepney" is a popular form of public transportation in the Philippines. It is well known for its flamboyant decoration and has also become a symbol of Philippine culture. Jeepneys were originally made from military vehicles left in the country by the United States of America, following the end of the Second World War.

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Below to above Replacement: Increased Fertility and its Determinants in Sri Lanka

With this recent development in fertility, the child dependency ratio is likely to increase in the near future, as will the ageing of the population. A future demographic scenario for Sri Lanka indicates a difficult outlook at both ends of the population pyramid.

By W. Indralal De Silva, B. Nishanthi Perera and K. Chamara Anuranga*

During the early phase of the demographic transition in Sri Lanka (in the 1920s), the birth rate persisted at about 40 per 1,000 population, with the death rate fluctuating at around 20 per 1,000. A slight decline in the death rate was observed from the late 1920s onward. After the 1940s, the crude death rate dropped at an unprecedented level: about 1.5 deaths per 1,000 population per year on average, before reaching the level of 12 deaths per 1,000 population by the middle of the twentieth century (Caldwell, 1986).

Fertility started to decline in Sri Lanka in the 1960s and by 1994 the country had undergone several transitions with regard to major demographic factors, having reached the crucial stage of replacement-fertility[1] and moved even below that level. Demographers researching determinants of population growth predicted that Sri Lanka would reach a total fertility rate (TFR) of 2.1 children per woman by the year 2000. Yet the country reached it about six years earlier, becoming the only one in South Asia to do so before the dawn of the new century (De Silva, 1994). A total of 18 countries and areas in the Asian and Pacific region reached the below-replacement level of fertility in the same period (Gubhaju, 2008).

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Although during the period 1995 to 2000 Sri Lanka experienced fertility rates even below the replacement level – identified by a TFR of 1.9 – the most recent survey data from the Sri Lanka Demographic and Health Survey (SLDHS, 2006-2007) indicate a TFR of 2.3, which demonstrates an increase in fertility, well above the replacement level. Within developing regions no single country has demonstrated this kind of fluctuation in TFR, once it has reached levels below replacement.

Against this backdrop, the present article examines Asia's fertility transition, focusing briefly upon fertility-related policies, programmes and targets in Sri Lanka. It also examines the demographic changes which enabled the country to achieve replacement-level fertility and to even pass beyond that level. Major factors underlying the recent fertility fluctuations in Sri Lanka, uncommon to any other developing country in the region, are also examined.

Data

The main sources of data for this analysis are the Sri Lanka Demographic and Health Surveys (SLDHS) for the years 1987, 1993, 2000 and 2006-2007. Samples for those surveys had been designed for multistage data collection and were based on a stratified probability sampling procedure, which ensures representativeness of the sample for the whole country. The SLDHS 2006-2007 survey covered all the provinces in Sri Lanka except the Northern one, which is home to only about 5 per cent of the Sri Lankan population. The SLDHS 2000 had excluded both the Northern and Eastern provinces of the country, where civil disorder prevailed at the time. Despite differences between these two surveys, which called for some adjustments on the part of the authors, comparison of the findings can be assumed to be reasonably accurate.

A total of 6,601 eligible respondents, ever-married women aged 15-49 years, had been identified in the Sri Lanka Demographic and Health Survey 2000 and 6,385 of those respondents were interviewed, indicating a response rate of 96.6 per cent. A wider sample of 15,068 respondents, ever-married women aged 15-49 years, had been identified in the Sri Lanka Demographic and Health Survey 2006-2007, with 14,692 interviews completed, indicating a further enhanced response rate of 97.5 per cent. These constitute the data sources used for the present study.

The expert views of several professionals in the population and health sector had been gathered on the current fertility phenomena, including with regard to the causation of recent fluctuations in TFR and the consequences of such fertility behaviour. Their views have been taken into consideration when conceptualizing the present paper.

The SLDHS surveys 2000 and 2006-2007 used two basic questionnaires - one on households which recorded information on all household members and the other on individuals, which recorded detailed information on eligible women, who had been identified based on the earlier household questionnaires. The questionnaire on individuals helped to collect information related to the respondents' background characteristics, reproductive history and child mortality, knowledge and practice of family planning, breast-feeding practices, marriage, fertility preferences, and health and anthropometric information on children. The details of the surveys are available online from: www.statistics.gov.lk/dhs.

Population change

The total population enumerated in Sri Lanka in the first census ever conducted in 1871 was only 2.4 million, while the 2001 population census enumerated 18.7 million, denoting an almost eightfold increase. The overall trend in the population growth rate during the period 1871 to 1946 - just over seven and a half decades - had been fairly low, ranging from 0.9 to 1.7 per cent per annum. During the post-Second World War period, between 1946 and 1953, a rapid escalation of the population growth rate to 2.8 per cent per annum was observed. Thereafter, the population growth rate of Sri Lanka declined steadily. By 1992 the country had one of the lowest annual population growth rates (1.0 per cent) in Asia. The two main factors responsible for this trend were fertility decline and increased emigration, especially towards the Middle East and developed countries.

The rapid increase in the annual rate of population growth in the post-war years in Sri Lanka was the result of a sharp decline in the death rate, while the birth rate remained at about 35-40 live births per 1,000 population. Since 1947 the death rate declined gradually to a very low level of about 5 per 1,000 population. The expectation of life at birth in 2001 was 68 and 76 years for males and females, respectively. A gradual decline in the birth rate had begun in 1960 which further contributed to a reduction of the annual rate of growth. The birth rate, which stood at 37 per 1,000 population in 1960, had declined to 18 per 1,000 by 2001 (De Silva, 2008).

Fertility and population control: policies and targets

Population planning policies and targeted fertility decline adopted by successive Governments of Sri Lanka during the period 1960 to 2001 were largely responsible for the spectacular decline in the birth rate. Such policy drives had to be introduced because Sri Lanka had become one of the most densely populated countries in Asia. Persistent growth of the population and the consequent pressure on habitable land had been of increasing concern to successive Governments, because population growth was far more rapid than could be sustained by the economy. In 1871, the population density in Sri Lanka was only 37 persons per square km, but by 2001, a more than eightfold increase was reported and the density parameter had reached to almost 300 persons per sq km.

In Sri Lanka, the Ten-Year Plan of 1959-1968 for the first time expressed grave concerns about the rapidly increasing population (National Planning Council, 1959). Even though the formulation of fertility control policies in Sri Lanka date back to the 1950s, those concerns were not followed by any policy implementation measures. In 1965 the Government of Sri Lanka, by a cabinet decision, accepted family planning as a national policy and initiated implementation of the policy in 1968 by establishing the Family Health Bureau within the Ministry of Health (Dangalle, 1989).

Between 1968 and 1977, under the umbrella of that organization, there was a gradual expansion of family planning activities and those services were integrated with the already well-developed maternal and child health services provided by the Ministry of Health throughout the country. The Five-Year Plan (1972-1976), which was presented in 1971, stated that "a high birth rate in the context of low standards of living and malnutrition can lead to a general deterioration in the health of the population, an increase in the incidence of disease and a rise in infant mortality. It is essential therefore that facilities for family planning should be made available to all groups in the population and not confined to the privileged sections of the society" (Ministry of Planning and Employment, 1971).

In many instances, the Government of Sri Lanka had noted the need to curb the persistently growing population, and population control was seen as critical in balancing the available resources with the demands of an increasing population. Therefore, the Government, in its population policy statement issued in 1991 (Ministry of Health and Women's Affairs, 1992), set for the first time a more quantitative target of achieving replacement-level fertility, a TFR of 2.1, by the year 2000.

The 1991 policy statement envisaged that, in order to achieve a zero population growth rate, and a stable population condition (denoted by equilibrium between birth and death rates, in the context of low mortality), Sri Lanka needed to reduce its fertility to the replacement level, reaching an average of two children per family. As population projections indicated, if the country was able to achieve a two-child family average by the year 2000, then about half a century later, around 2050, the population would stop expanding and by that time the population would be about 25 million (Ministry of Health and Women's Affairs, 1993).

High to replacement-level fertility

Gradual decline in TFR, from high to low, towards the replacement level, is reflected in the rates calculated using data collected from the population censuses, the registration system and from survey data for more recent levels. TFR for selected years from 1953 to 2006-2007 are shown in table 1. TFR decreased from 5.3 in 1953 to 3.4 in 1981, or by almost two live births per woman, dropping further to 2.8 in the period 1982-1987 and to 2.3 during the period 1988-1993. Sri Lanka's fertility dropped about 20 per cent between the periods 1982-1987 and 1988-1993 (see table 1).

The hypothesis whether Sri Lanka had reached the replacement level of fertility before the target year has been presented in an earlier publication (De Silva, 1994). In the present paper, using data from several sources, such the Demographic and Health Surveys of 1987 and 1993, the census of 1981 and the Registrar General's

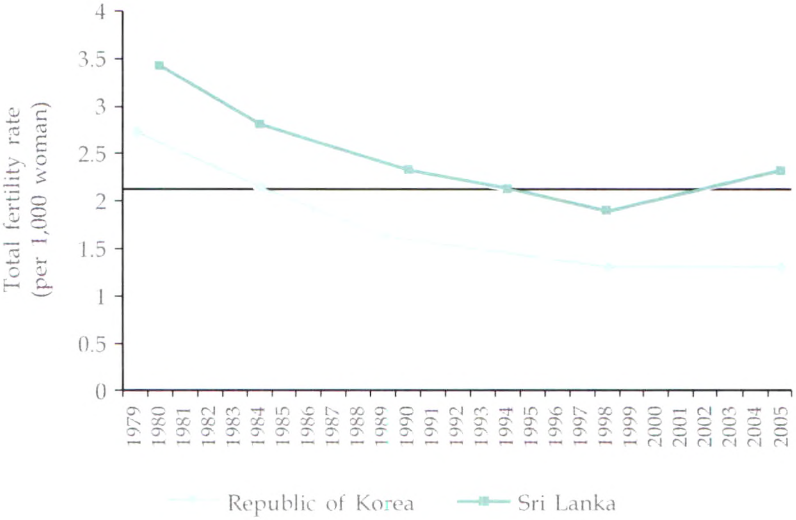
Table 1. Total fertility rate (live births per woman), Sri Lanka

Source	Year/period	Total fertility rate
Census, registration	1953	5.3
Census, registration	1963	5.3
Census, registration	1971	4.2
World Fertility Survey 1975	1974	3.6
Census, registration	1981	3.4
Demographic and Health Survey (DHS) 1987	1982-1987	2.8
DHS 1993	1988-1993	2.3
DHS 2000	1995-2000	1.9
DHS 2006-2007	2003/2004-2006/2007	2.3

Sources: Department of Census and Statistics (2002) and online from: www.statistics.gov.lk/dhs.

Department, it is noted that TFR in Sri Lanka had declined to replacement-level fertility by the mid-1990s. Data from the 2000 SLDHS confirms the above hypothesis. The SLDHS survey data for the period 1995-2000 have measured TFR in Sri Lanka to be in the range of 1.9 children per woman, which was even below the replacement level of 2.1. Thus, based on the above sources, figure 1 clearly indicates that TFR of Sri Lanka had reached the replacement fertility level by 1994 at the latest.

Figure 1. Change in total fertility rate in Sri Lanka and Republic of Korea



Sources: Data for Republic of Korea obtained online from: www.prb.org.
Data for Sri Lanka were obtained from Department of Census and Statistics.

Below replacement to above replacement

In the context of the economic transition that is taking place in Sri Lanka, it is logical to compare the fertility decline that had taken place in the country with that of a newly industrialized economy. Congruent patterns of fertility decline can be observed when declining fertility levels and patterns of Sri Lanka are compared with that of the Republic of Korea, a newly industrialized economy. As shown in figure 1, the similarities are clear. Both Sri Lanka and the

Republic of Korea show the same pattern of fertility decline, but Sri Lanka's fertility levels have always remained higher than those of the Republic of Korea, which dropped from 2.7 in 1980 to the replacement level in 1985, i.e. within a five-year period (KIHASA, 1992), whereas it took Sri Lanka about eight years for its TFR to drop from 2.7 in 1986 to the replacement level in 1994. The Republic of Korea had reduced fertility to below the replacement level (1.7) during the period 1990-1995 (Gubhaju, 2008) and subsequently by 1998 TFR in the Republic of Korea reached 1.3, which was very much below the corresponding fertility level of Sri Lanka.

The indices related to fertility transition in Sri Lanka, particularly TFR valued at 1.9 for the period 1995-2000 calculated from the SLDHS 2000, raised some expectation among researchers, considering that Sri Lankan fertility could have remained stable or even could have gone below the level reported by SLDHS (De Silva, 2007; Abeykoon, 1998). Nevertheless, at that juncture, it was not possible to predict the needed changes in the country's policies and programmes to deal with a fertility level equating to or even less than the replacement level.

Unexpected fertility transition: below to above replacement

The SLDHS 2006-2007 indicated an unexpected increase in TFR, and the hypothesis of replacement level fertility or even below that level in Sri Lanka in the new millennium was therefore challenged. The expectations of population planners were not fulfilled. TFR calculated to be 1.9 during the period 1995-2000 increased to 2.3 over a three-year period (2003/2004-2006/2007) according to SLDHS 2006-2007 (table 1). The achieved below replacement fertility level had increased to the above replacement-level. Simply put, a reversed trend is marked in Sri Lanka's fertility transition. The fertility level observed currently (TFR 2.3) is identical with the level observed in the 1993 SLDHS for the period 1988-1993.

Consequent to this, Sri Lankan fertility levels are now at par with those of a number of South Asian countries (table 2). In fact TFR of Bhutan, a landlocked country in South Asia, is 0.1 point less than that of Sri Lanka. Currently, TFR of Sri Lanka is still the second lowest in comparison with that of all other South Asian countries, but the matter for concern is that in these same countries, TFR had been gradually declining during the period 1995 to 2000 (table 2), whereas in Sri Lanka only it increased from 1.9 to 2.3 during the same period.

Table 2. Total fertility rate by country in South Asia

Country	Total fertility rate (live births per woman)			
	1990-1995	1995-2000	2000-2005	2007
Afghanistan	8.0	8.0	7.6	7.1
Bangladesh	4.1	3.6	3.2	2.9
Bhutan	5.5	4.3	3.0	2.2
India	3.9	3.5	3.1	2.8
Maldives	5.6	4.1	2.9	2.6
Nepal	5.0	4.4	3.8	3.3
Pakistan	5.9	5.0	4.1	3.5
Sri Lanka	2.2	1.9	2.1	2.3

Sources: ESCAP (2008); Sri Lankan data derived from table 1.

Changing age patterns of fertility

The broader picture of fertility behaviour can be understood through the analysis of age-specific fertility rates, because such age patterns indicate the tempo of childbearing, the age at which women begin to reproduce, the age at which they cease reproducing and any change in the pattern of childbearing occurring over time. For example, in Taiwan Province of China, where below replacement fertility has been achieved, fertility decline to the replacement level occurred at all ages of women in their reproductive years (Lee, 2009).

Recent changes in age-specific fertility rates in Sri Lanka further support the contention that fertility levels in Sri Lanka had been increasing during the period 2003/2004 to 2006/2007 (table 3). As shown in figure 2 and table 3, the age-specific fertility rates in Sri Lanka rise when women are in their early twenties, peak in the age group 25-29 years, slightly plateau in the subsequent years and then gradually decline along with the declining fecundity of women. Over many decades, there had been no change in this age pattern of fertility. Between 1975 and 1993, large fertility reductions had occurred among all age groups (table 3). Age-specific fertility had further declined significantly between 1993 and 2000. Thus, as depicted in figure 2 between 1975 and 2000, both older and younger women experienced a remarkable decline in fertility over this 25-year period.

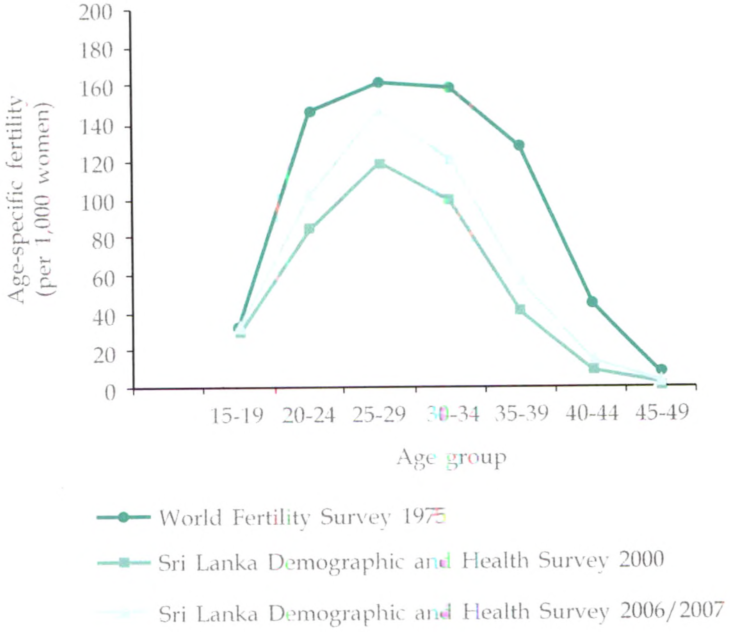
De Silva (1991), in examining the prevailing declining pattern of age-specific fertility rates (ASFR), concluded that "women in Sri Lanka are inclined to limit the number of children at a relatively

Table 3. Age-specific fertility rates of Sri Lanka

Age (Years)	World Fertility Survey 1975	Sri Lanka Demographic and Health Survey 1993	Sri Lanka Demographic and Health Survey 2000	Sri Lanka Demographic and Health Survey 2006/2007	Percentage change
	1974	1988-1993	1995-2000	2003/2004-2006/2007	1995-2000 to 2003/2004-2006/2007
15-19	31	35	27	28	3.7
20-24	146	110	83	102	22.9
25-29	161	134	118	147	24.6
30-34	158	104	98	122	24.5
35-39	126	54	40	57	42.5
40-44	43	14	8	14	75.0
45-49	6	4	1	1	0.0
TFR	3.4	2.3	1.9	2.3	21.0

Sources: Department of Census and Statistics (2002) and online from www.statistics.gov.lk/dhs.

Figure 2. Age-specific fertility rates, Sri Lanka



Source: Various sources of the Department of Census and Statistics.

early age". Until the year 2000, no change in the declining pattern of fertility had been observed among women from all socio-economic strata in Sri Lanka. With the dawn of the new century, the age pattern of fertility in all age groups, except between 45-49 years, changed significantly, demonstrating a sudden and unexpected increase. ASFRs for the 25-39 age group in the 2006-2007 SLDHS were even higher than the corresponding values reported in the SLDHS 1993 (see table 3).

The percentage change in ASFRs of the 2000 and 2006-2007 SLDHS shows that the largest increase was among the 35-44 age group. Although fertility had increased, the age group in which peak fertility occurred had not changed, and the age pattern of fertility had remained unchanged (see figure 2). Interestingly, the latest SLDHS data show that the peak ASFR of women in the 25-29 age group was 147 per 1,000 women in that age group, which is only 14 points less than the peak value of 161 per 1,000 women reported in the 1975 World Fertility Survey (see table 3).

The adolescent fertility rate of Sri Lanka increased by 3.7 per cent even though teenage fertility (age group 15 to 19) declined in most other developing countries, except for Pakistan, which indicates a 14-point increase (table 4). Substantial declines in adolescent fertility rates have occurred in Afghanistan, Bhutan and Nepal. Of these countries, Afghanistan and Nepal exhibited relatively higher TFRs throughout the period (table 2).

Table 4. Adolescent-specific fertility rate by South Asian countries

Country	**Adolescent fertility rate (live births per 1,000 females aged 15-19)**		
	1995-2000	**2000-2005**	**2005-2010**
Afghanistan	166.2	131.9	113.0
Bangladesh	151.5	149.2	124.5
Bhutan	73.2	50.9	36.8
India	99.5	68.9	61.8
Maldives	45.4	26.2	23.3
Nepal	127.2	122.2	114.6
Pakistan	68.8	22.0	35.6
Sri Lanka	27.0	28.0	28.0

Source: ESCAP (2008).

Determinants of decline and subsequent increase in fertility

Fecundity, a naturally complex process, is also affected by several socio-economic and biological variables. In addition, a decrease or increase in the fertility level in any given country is largely determined by three non-genetic factors, such as changes in the age at marriage, use of contraception and the practice of induced abortion. However, the impact of those changing agents on fertility also varies. For instance, an increase in the average age at marriage of females could have a negative impact on fertility, while a decrease in the age at marriage could affect the level of fertility in the opposite way (Jones, 2007).

Trends in marriage timing

The postponement of marriage contributes substantially towards a reduction in the level of fertility by limiting the total reproductive lifespan of the female, the cumulative effect of which influences the size of the individual families and the population growth rate of the country. In Sri Lanka, during the past century the female age at marriage increased by almost seven years. The delay in marriage and its impact on fertility led Krik (1969) to refer to Sri Lanka as “the Ireland of Asia”. Caldwell and others (1989) identified Sri Lanka as the leader in third world Asia for demonstrating a changing pattern in the age at marriage. By the mid-1970s, Sri Lankan women were marrying not at puberty but a decade after the onset of puberty.

Universal and early marriage of females is common in a large number of South Asian countries. Sri Lanka, where marriage occurs very late and may no longer be considered as universal, appears as an exception in the subregion. About 9 per cent of females in the age group 40-44 and 5 per cent in the age group 45-49 were never married and an upward movement of those never-married proportions had been a conspicuous general trend until recent times.

In terms of family formation the singulate mean age at marriage (SMAM) for females increased by almost 5 years, from 18.3 years in 1901 to 23.5 in 1971 (table 5). There was a slight decline in SMAM during the period 1975 to 1981, and since then the average age at marriage in Sri Lanka showed an increase. On average, by 1993, females were marrying at the age of 25.5 years. Many researches have indicated that up to 1970, marriage postponement in Sri Lanka was responsible for about 60 per cent of the fertility decline. The last two DHS surveys in 2000 and 2006-2007 show that, the average age at marriage of females in Sri Lanka gradually declined compared with the average in the 1993 DHS. However, it is interesting to note that the latest SMAM of females (23.6 years) reported in the 2006-2007 SLDHS is very much comparable with the corresponding figure for 1971.

Data presented in table 5 indicate that SMAM for males has been about 28 years for some time since 1981, although data are not available to examine related trends during the recent past. Since the increase in the male age at marriage has been less rapid than that of females the sex differential has dropped from over 6 years in 1901 to just over 3 years in 1981. There is a strong likelihood that, along with the female age at marriage, the male age at marriage would have also declined in the recent past.

Table 5. Trends in singulate mean age at marriage in Sri Lanka

Year	Males (years)	Females (years)	Difference between males and females (years)
1901	24.6	18.3	6.3
1911	26.5	20.8	5.7
1921	27.0	21.4	5.6
1946	27.0	20.7	6.3
1953	27.2	20.9	6.3
1963	27.9	22.1	5.8
1971	28.0	23.5	4.5
1975 Sri Lanka World Fertility Survey (SLWFS)	28.2	25.1	3.1
1981	27.9	24.4	3.5
1987 Sri Lanka Demographic and Health Survey (SLDHS)	-	24.8	-
1993 (SLDHS)	-	25.5	-
2000 (SLDHS)	-	24.6	-
2006-2007 (SLDHS)	-	23.6	-

Sources: Various sources of the Department of Census and Statistics.

In Sri Lanka the exposure to issues related to conception is closely related to marital union. Therefore, it is logical to assume that increasing average age at marriage, particularly of females, is negatively related with fertility. Thus, the decreasing trend in female SMAM during the recent past would have at least partially contributed to the recent increase in fertility in Sri Lanka.

Trends in contraceptive use

High and effective prevalence of contraceptive methods is an important non-genetic determinant of the declining fertility level in a community. It is useful to examine the trends in the use of contraception in Sri Lanka and the recent changes in the prevalence rates, if any, to elucidate the causes of recent fertility increase in the country. After 1970, the key determinant in the fertility decline was the control of fertility within marriage and the decline in consequent marital fertility (Trussell, 1980; McCarthy, 1982). There was also evidence that the decline in such fertility in Sri Lanka had already started before the national family planning programme could have had much impact (Alam and Cleland, 1981; Langford, 1982). After the inauguration of the national family planning programme in 1965, the Government adopted a "cafeteria" approach whereby the users could select their contraceptive method of choice from a wide range made available to them through the national programme (Dangalle, 1989). In addition to the public sector, a number of non-governmental organizations (NGOs) provided family planning services.

The level of contraceptive use among Sri Lankan women increased rapidly in the period following 1970. Awareness of contraception increased not only for the purpose of ceasing childbearing but also for that of spacing births. The level of contraceptive use increased from 34 per cent in 1975 to 62 per cent in 1987 and further to 70 per cent in 2000 (table 6).

Emergence of a reversed pattern to the one previously observed -- an elevated use of contraception among fecund women in Sri Lanka -- is a relatively recent phenomenon. The SLDHS 2006-2007 reports

Table 6. Trends in current contraceptive use by modern and traditional methods among currently married women aged 15-49

Type of method	SLWFS 1975	SLCPS 1982	SLDHS 1987	SLDHS 1993	SLDHS 2000	SLDHS 2006-2007
Modern	20.2	31.8	40.6	43.7	49.5	52.5
Traditional	14.2	26.0	21.1	22.4	20.5	15.9
All	34.4	57.8	61.7	66.1	70.0	68.4

Sources: Various sources of Department of Census and Statistics.

Abbreviations: SLWFS = Sri Lanka World Fertility Survey;
SLCPS = Sri Lanka Contraceptive Prevalence Survey;
SLDHS = Sri Lanka Demographic and Health Survey.

only 68.4 per cent of contraceptive use among the currently married women of reproductive age (for more details, see: www.statistics.gov.lk/dhs). This decline is not very significant compared with the corresponding level of 70 per cent, reported in 2000. The decrease in the use of contraception among married women would also have partially contributed to the observed increase in the level of fertility in Sri Lanka.

The acceptance of modern contraception in Sri Lanka is a relatively recent development. According to the 1975 WFS, 59 per cent of users of contraception were relying on modern methods, while the SLDHS 1987 estimated that the proportion of modern method users had increased to 66 per cent. The SLDHS 2006-2007 indicated that the corresponding proportion had further increased to 77 per cent. However, even now, among current users, about one quarter rely on traditional methods (table 6). This clearly implies that a substantial proportion of users of contraception in Sri Lanka still rely on traditional methods.

Significant changes have taken place recently with regard to the preferred modern methods of contraception. Although modern temporary methods show a continuous increase in use, a similar increase has not occurred with regard to permanent ones. Findings from the latest SLDHS show that the proportions of individuals that use the most effective methods, identified as male and female sterilization, have declined remarkably. For instance, of currently married women in 1987, one quarter were relying on female sterilization. By contrast, by 2006-2007 the corresponding figure had dropped to 16.3 per cent (table 7). A similar pattern of preference can be observed regarding male sterilization.

Comparison of the two periods also confirms that a remarkable decline in the proportion of women relying on the use of non-reversible methods took place. When the period 2000 to 2006-2007 is compared with the previous one from 1987 to 2000, the proportions who used such methods, especially male and female sterilization, was higher during the previous phase than the proportion of users of terminal methods in the latest one. This trend raises a pertinent question: is there an unmet demand for sterilization among Sri Lankan women? And Is the imbalance in the service delivery of permanent methods of family planning caused by any unrevealed sociocultural and religious issues which would have an impact on the level of fertility among married women? Alternatively, it may also be a matter of choice where women may have diverted their reliance on contraception to induced abortion instead.

Table 7. Trends in current contraceptive use by method among currently married woman aged 15 – 49

Contraceptive method	Percentage currently using		
	SLDHS 1987	SLDHS 2000	SLDHS 2006-2007
Pill	4.1	6.7	8.1
IUD	2.1	5.1	6.5
Injection	2.7	10.8	14.8
Condom	1.9	3.7	5.7
Female sterilization	24.9	21.0	16.3
Male sterilization	4.9	2.1	0.7
Implant	0.0	0.1	0.3
Other (modern)	-	-	0.1
All modern methods	40.6	49.5	52.5
Rhythm	14.9	11.9	10.1
Withdrawal	3.4	7.1	5.8
Other method	2.8	1.5	0.1
All traditional methods	21.1	20.5	15.9
All methods	61.7	70.0	68.4

Sources: Department of Census and Statistics (2002) and online from: www.statistics.gov.lk/dhs.

Practice of induced abortion

The practice of induced abortion has recently emerged as one of the important determinants curtailing fertility in Sri Lanka. Precise national estimates are not available on the number of abortions undergone by Sri Lankan women because of their illegality. The term abortion is defined as the loss of an embryo or foetus either spontaneously (miscarriage) or induced (when a pregnancy is terminated on purpose) before the foetus is viable, which in developed countries is considered to be at 20 weeks (WHO, 2003). Thus, an abortion could either be spontaneous,[2] which means occurring on its own, or induced.

Despite the highly restrictive abortion law in Sri Lanka, indictments for criminal abortion hardly occur and offenders are rarely persecuted for such an act. In the past, a number of attempts were made by the Government of Sri Lanka to liberalize the country's strict abortion law but those attempts were opposed by anti-abortion leaders on moral grounds. Thus, abortion remains illegal in Sri Lanka under Article 303 of the Penal Code[3] of 1883.

Researchers tend to consider that abortion in Sri Lanka is an unrecognized method of fertility control (Langford, 1982; Caldwell and others, 1987; De Silva, 1991). A survey conducted as early as 1984 using in-depth interviewing methods (Caldwell and others, 1987) showed that most couples in Sri Lanka believed that induced abortion occurred to a limited extent, while approximately one fourth of respondents felt that it was common. The majority of those against induced abortion held adverse views on the practice, on the ground that it was dangerous rather than owing to any immorality associated with the act. However, during the last two to three decades, abortion services have become increasingly therapeutic. Thus, serious post-abortion complications and deaths have been hardly reported.

Researchers engaged in abortion-related research tend to agree on the number of abortions estimated to be performed annually throughout the country, ranging from 125,000 to 225,000 induced abortions (De Silva, Dayananda and Perera, 2005). A community survey conducted in 1998, with a total population of over 100,000, gathered abortion experiences occurring within the community during the preceding three years. The study, which applied the randomized response technique, reported that on average the induced abortion rate of married women in the reproductive age group amounted to 10.89 induced abortions per 1,000 married women.

Although national surveys such as SLDHS had attempted to collect information on the incidence of induced abortion in Sri Lanka, the incidence was grossly underreported. According to SLDHS 2000, among 6,385 ever-married women of reproductive age, 76 induced abortions had taken place, which is even lower than the number of induced abortions reported in the SLDHS 1993, that is, 152. The above-mentioned pattern of reporting may be due to the stigma attached to the issue of abortion while it also confirms the difficulty of collecting reliable data on this sensitive matter through official national surveys.

Abortion services provided by non-governmental organizations and other service deliverers might have contributed significantly to the achievement of below replacement fertility in Sri Lanka. However, while researchers on the marital status of abortion seekers tend to agree that about 90-95 per cent of those clients were married, a number of studies attempted to examine the reasons for the termination of a pregnancy through abortion.

The following excerpts are some of the answers given by seekers of induced abortion in their responses to in-depth examination on the subject, or conclusions reached after in-depth interviews, according to a study undertaken by Rajapakse and De Silva (2000).

(a) The most common reason given in all studies was that the "pregnancy was too soon after the last delivery";

(b) "Having completed the family" was the comment provided by abortion clients in many studies as the second most popular justification;

(c) "Foreign employment, poverty and health reasons" are the next set of reasons reported by these women;

(d) "About two thirds of the abortion clients were using some method of contraception at the time they became pregnant".

The above-mentioned study also shows that even though a small proportion of abortion seekers were not relying on any form of contraception, among those who did use contraception, over two thirds relied on traditional methods, the failure rates of which are significantly higher than for modern methods. They might have relied on traditional methods to avoid conception, knowing that if they were to get pregnant, induced abortion services for termination would be available. Even though induced abortion is illegal, abortion services are available in many parts of the country at an affordable price.

Discussion and conclusions

In the 1950s and 1960s, fertility in Sri Lanka remained at a very high level with a TFR of 5.3, indicating that on average a Sri Lankan woman had about 5.3 live births over her lifetime. By 1994, the replacement level of fertility had been reached as TFR had decreased to 2.1 children per woman, but the decline continued. The SLDHS 2000 reported a TFR of 1.9 children per woman, confirming that Sri Lanka was becoming the first country among all developing countries in South Asia to reach a below replacement level fertility in 2000, even when the country's per capita GDP amounted to only $1,990.

The SLDHS 2006-2007 reported that the level of fertility, which was initially below replacement, had unexpectedly increased to 2.3 children per woman. This was contrary to what population experts had projected.

The Sri Lankan record in curtailing fertility had been impressive. The population planners had expected that replacement level fertility (TFR of 2.1) would be achieved by the year 2000, but it was achieved by 1994, ahead of the targeted date (De Silva, 1994). Many countries in South Asia had to postpone the targeted date by which they wanted to achieve replacement-level fertility owing to the sluggish process of fertility decline in those countries. For example, the following quote is from Bhat (undated) in which the researcher reviews the fertility trends and future prospects for India, commenting also on the changing dates to attain replacement fertility level in the country.

The goal of reaching Net Reproduction Rate (NRR)[4] of one was set for the year 2000. In plan documents this goal was postponed to 2006-2011 in the mid-1980s and further to 2011-2016 in the beginning of 1990s. Interestingly the National Population Policy announced in 2000 perhaps to underscore the renewed commitment to population stabilization had advanced the date to the year 2010.

In Sri Lanka, the key factors contributing to fertility decline at levels even below replacement include delay in age at marriage, which curtails the reproductive age span, particularly for females, high reliance on contraception and induced abortion. Even when fertility increased well above the replacement level, the same key factors had been at play, yet the trend was ultimately reversed. It is pertinent to examine the reasons behind such an unusual scenario.

During the period 2006-2009, the prolonged civil war in Sri Lanka intensified. A large number of young soldiers and many civilians died as war casualties. Additionally, in 2004, the Indian Ocean tsunami killed about 35,000 persons in Sri Lanka, the majority of whom were women and children (for more details, see: www.ruh.ac.lk/tsunami/statistics.html). Those events and the heavy involvement of young people in the civil war might have influenced Sri Lankan couples of reproductive age to replace the vacuum created in society. Presumably the change in fertility from below to above the replacement level occurred throughout those key periods.

According to Asian standards, particularly those prevailing in South Asia, entering into nuptial bonds should be done at an early age. For a long time, the average age of entry into marriage in Sri Lanka had been more than 25 years and 28 years for women and men, respectively. The SLDHS 2006-2007 however showed that this average did not apply anymore. Owing to a multiplicity of reasons a new trend has emerged among young Sri Lankan men and women who marry at an even earlier ages.

Marriageability for men in Sri Lanka is largely related to their employment status - firstly whether a man has a job or not and secondly the status of the job, whether or not it is a "permanent" one (Caldwell, Gajanayke, Caldwell and Caldwell, 1989). It is also important to note that, during the early part of the current decade, the unemployment rate declined to a low of 5 per cent of the labour force. Seemingly almost all young males were employed, enabling the majority of them to enter into marriage. Also, a significantly large number of young men joined the armed forces -- the majority of them getting married at an early age. Owing to the risky nature of their employment, the newly married soldiers would generally be keen to conceive a baby as soon as possible.

Apart from the declining average age at marriage, conceptualization and dissemination of pronatalistic views among the majority of couples would have caused overall contraceptive use to decline. Owing to the pronatalist views disseminated by politicians, policymakers, medical and paramedícal groups, directly and indirectly, the demand for contraceptive commodities and service delivery would have declined. After achievement of the replacement level and subsequently below replacement fertility, most of the family planning activities of the State, private sector and NGO sector slowed down.

Typically, when a family has achieved its desired family size, a modern or traditional family planning method is used to avoid further conception. However, for most soldiers engaged in the civil war, the outlook on family planning was slightly different. Usually soldiers come back home about once a month and in some cases only once in every two months. The couples may have not practised family planning very methodically assuming that the spouse was not at risk of getting pregnant because of the irregularity and infrequency of cohabitation. However, when unprotected sex occurred during the risk period, some women would have conceived; even though they may not have intended to, those women might have decided to carry on with their pregnancy owing to pronatalist views prevailing in society at that time.

Not only has the reported contraceptive prevalence rate declined, but the method mix has also changed significantly. Interestingly, among currently married women, the proportion who relied on permanent methods (sterilization) declined for many reasons. The higher level of side effects due to sterilization, as reported in many studies, would have caused the majority of couples to opt for modern temporary methods (De Silva, Dayananda and Perera, 2006). A number of public protests against sterilization occurred in many parts of the country. Typically, the Medical Officer of Health in each area would have been trained by the Family Health Bureau on sterilization techniques. As indicated by a number of key informants, the majority of the medical profession has become reluctant to perform sterilization procedures owing to the pronatalistic views held by an increasing number of persons, including those with a higher level of education. Further, such views have also been held by a critical number of medical professionals who started avoiding regular training for the sterilization procedures - something which in turn would start creating an imbalance in the service delivery for sterilization.

In recent years, the stability of Sri Lankan couples has deteriorated (De Silva, 2005). Consequently many married men and women have not opted for terminal methods as the probability has increased that marital partners would change. This situation was further aggravated in the wake of the 2004 tsunami, during which many men and women who had been sterilized lost their children and had no chance of conceiving again.

However, when couples are unable to limit or space births using contraception, the majority may resort to abortion. Although no official statistics are available on this issue, abortion providers throughout the country agree that in recent years, there has been a significant drop in the caseload of abortion seekers. Yet, again this may be due to pressure from pronatalist groups or may be related to the emergence in recent years of a non-equilibrium situation between the demand for and supply of abortion services.

In general, causation for such a trend is both complex and multiple. In recent years, the Government has intensified its pressure on abortion centres, initiating vigorous persecution. By the beginning of the year 2007, the Government launched a well-coordinated drive to bring a halt to abortion services made available in the country by international and local NGOs and some private facilities. As a result, almost all abortion service centres were closed or are in the process of being closed, and legal action is being brought against the service providers. There has been no public reaction and rallies by defenders of women's rights against such raids, presumably owing to the prevailing strong pronatalist views in the country.

In Sri Lanka, the remarriage rate of women has increased during the recent past. Since the early part of the 1980s, as a result of the civil war, an increasing number of young women with small children have lost their husbands. Such young widows – who needed a father for their children and a life partner to rebuild their lives – tended to remarry. In the meantime, there also may have been attitudinal changes on the issue of widowhood and remarriage. The majority of families in such situations would be keen on having babies. Therefore, the increasing trend in remarriage would have contributed to an increase in the level of fertility.

In 2004, the Government of Sri Lanka issued a new circular on maternity leave for women working in the public sector (Public Administration Circular No/3./2004). Under this circular, a woman is entitled to a significantly long period of maternity leave. Accordingly, a government female officer who has given birth to a living infant can get up to 84 days (working days) of full-pay leave, 84 days of half-pay leave and another 84 days of leave without pay. This addresses a key challenge for working women: the issue of caring for children in their very first stage of life.

Recent evidence shows that there has been a clear shift in terms of priorities for family planning programmes implemented throughout the country. For example, the Population Division under the Ministry of Health, which had significantly contributed to enhanced knowledge on population issues including population growth, ageing, reproductive health, and contraception among the general public, received low priority within the Ministry during the past few years, and was abolished in 2006.

Following the achievement of below replacement-level fertility within a remarkably short timespan, population planning activities have largely slowed throughout the country. Also nationwide campaigns, such as those promoting the benefits of smaller families ("Smaller family is golden"), which were carried out successfully during the late 1970s and 1980s, also contributed to the trend. The focus of family planning programmes has shifted from "quantity" to "quality", which would also have indirectly affected the distribution and use of contraceptives. Other determining factors include the increasing number of pronatalist sympathizers who argue that the country needs a higher number of births to compensate for the number of casualties brought about by the 30 years of civil strife and the 2004 tsunami (views of key informants).

With this recent development in fertility, the child dependency ratio[5] is likely to increase in the near future, as will the ageing of the population. A future demographic scenario for Sri Lanka indicates a difficult outlook at both ends of the population pyramid. In other words, a contradictory situation is emerging in which the ageing of the population will continue along with an increase in child dependency, thus increasing the dependency burden for the working population at both ends of the population pyramid. The current global economic crisis further compounds the situation. With increased child dependency over the coming years, the Government is expected to spend more on the young-age population, and this may drain the resources required for the development of the country.

Thus, reducing the level of fertility could again appear as an appropriate solution for many of the socio-economic problems facing the country.

Presumably, the increase in fertility observed during the early part of the new millennium will be short-lived. There may be a time in the near future when fertility will start declining again towards the replacement level. That particular point may be determined primarily by the degree to which pronatalist views and practices are once again reversed by the State and the Sri Lankan community.

Endnotes

[1] Replacement-level fertility implies a total fertility rate usually between 2.1 and 2.2 children per woman, depending on a country's level of mortality. Since the infant mortality rate of Sri Lanka is at a very low level, the country's replacement fertility is defined as an average of 2.1 children per woman. Usually a net reproduction rate (NRR) of 1.0 is considered as the more appropriate measure to represent replacement-level fertility. However, due to unavailability of NRR values for Sri Lanka during the recent past, only TFR values are being used to identify the replacement level in this study.

[2] Spontaneous abortions are commonly known as miscarriages and may occur in 25-30 per cent of all conceptions, often as a result of chromosomal anomalies. Although miscarriages are common, they hardly lead to deaths or serious complications unlike induced abortions. By contrast, induced abortions which are performed illegally in Sri Lanka, have become a major health risk for women.

[3] Section 303 of the Penal Code provides that anyone voluntarily causing a woman with child to miscarry is subject to up to three years imprisonment and/or payment of a fine, unless the miscarriage was caused in good faith in order to save the life of the mother. A woman who induces her own miscarriage is subject to the same penalties.

[4] The average number of daughters a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates and the mortality rates of a given period. It is expressed as number of daughters per woman.

[5] In demographic terms, the child dependency ratio is defined as the number of children under 15 years of age for every 100 persons of working age.

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The Effect of Remittances on Return Migration and its Relation to Household Wealth: The Case of Rural Thailand

The present findings suggest that, while a household economics approach may be more practical in describing strategies pursued by rural-to-urban migrants in developing countries, theorists and policymakers need to pay more attention to the different types of motivations that migrants and households follow at various points on the wealth continuum.

By Yuying Tong and Martin Piotrowski*

When Ravenstein (1885) in writing on the "laws of migration" stated that each current of migration produces a compensating countercurrent, return migration has been acknowledged as important to any thorough understanding of migration. Yet, for many years the view of migration as primarily a one-way phenomenon dominated empirical inquiries. While studies have focused on the departure of migrants, the migration journey, arrival, settlement and integration, the return of migrants has received far less attention (King, 2000).

In spite of the lack of research, return migration is an important subject of inquiry, as return migrants can have substantial economic and social effects on migration-sending communities. Return migrants may replenish the loss of human capital resulting from

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differential migration of skilled migrants, and they can potentially bring with them the needed financial capital to start a family business. They may also introduce new ideas and innovations, or have the negative effect of introducing diseases or conditions contracted while residing in urban settings (for instance HIV/AIDS).

Recently, researchers have begun to utilize new data sources to empirically examine return migration (Lindstrom, 1996; Constant and Massey, 2002; Zhao, 2002), and theoretical links have been proposed between migrant remittances (money and goods sent by migrants to their home households) and a migrant's intention to return home (Hoddinot;, 1994, Lucas and Stark, 1985). Various shortcomings in past research designs have left a dearth of high-quality empirical investigations into the subject matter. Further, although the role of household economic status has been the subject of theoretical arguments about migrant-to-household remittances (VanWey, 2004), empirical investigations of its effect on return are still lacking.

In this study, the authors attempt to fill this gap in the literature by examining the effect of remittances on return migration to rural areas of origin in a developing country. A basic question is raised: "How does sending remittances to an origin household affect return migration, given the economic status of the home household?" To examine the effects of remittances on return migration, longitudinal panel data are used from Nang Rong, a rural, agricultural district located in north-eastern Thailand. The richness of data made available enable the authors to overcome a number of limitations encountered in past studies, by examining the phenomenon over time, using explicit data on several varieties of remittances, as well as using a longitudinal sample which avoids some of the problems associated with sample selectivity inherent in many studies.

Theories of return migration

Similar to the case of out-migration, return migration is a complex process which is affected by a combination of factors, including characteristics of migrants and conditions in both sending and receiving communities. Many migration scholars -- most notably those working in the tradition of the new economics of labour migration (NELM) (Stark 1991; Taylor, Rozelle and De Brauw, 2003) - view migration, and hence return, as part of a household strategy aimed at overcoming non-existent or imperfect markets in developing regions where local employment opportunities are scarce. Other research considers a different set of prerequisites for return, which do not involve a household strategy. For example, some see return preceded by the sending of remittances as an attempt by migrants to maintain membership rights in their origin households or communities. These perspectives are discussed below to elaborate how they can be used to understand the role that remittances play in migrants' return decisions.

New economic theory

New economics scholars theorize that households develop strategies involving the migration of individual household members. Those individuals are target earners whose goal is to provide capital for joint consumption of all household members (Wood, 1981). Stark (1991) hypothesized that migrants play the role of financial intermediaries, enabling rural households to overcome credit and risk constraints during the transition from familial to commercial production. One or more migrants are sent out to earn money. Migrants remain a part of their origin household throughout the migration experience, and they send remittances back to those households.

By doing so, a migrant may be motivated by a desire to participate in a contemporaneous co-insurance scheme. Co-insurance occurs when a migrant and household take turns insuring each other from market fluctuations and risky ventures. For example, the household may provide a safety net to insure the migrant against involuntary unemployment, or a migrant may send remittances to enable a household to invest in a risky new production technology, such as a high-yielding crop variety (Stark and Lucas, 1988). This strategy is effective for reducing risk when the migrant moves to a location with a different risk profile.

Investment is a second type of motive It tends to be sequential in nature, and there are several varieties. Investment can be initiated by the household. For instance, the household could bear the initial costs of a migrant's education, which enables the migrant to get a relatively stable, high-paying job. This type of job permits the migrant to earn more money, which in turn leads to higher remittances to the household. Investment may also be initiated by the migrant, such as when the migrant sends money to invest in the education of younger siblings, or when the migrant remits to the household in anticipation of future property bequests, such as land, housing or goods, from the household (Hoddinot, 1994). Either way, both the migrant and household benefit jointly from their mutual arrangement and both actors follow a mix of altruistic and self-interested motives (Lucas and Stark, 1985).

According to the previously mentioned theory, migrants return because their earnings target has been met, and return signifies the final step in a pre-arranged plan (Constant and Massey, 2002). Both co-insurance and investment may suggest eventual return migration. If the migrant is following a co-insurance motive, it follows that the migrant's remitted earnings may be sufficient to insure the household from risk, at least for a time until the migrant's next migration. Therefore, if the sending of remittances is part of a co-insurance arrangement, the sending of remittances should make the migrant more likely to return, especially if sufficient money has been sent to provide the needed insurance. If the migrant is following an investment motive, one can make similar inferences. Either the migrant has sent sufficient amounts of remittances to repay for the household's initial investment in the migrant's education, or the migrant has sent sufficient amounts of remittances to safeguard property for eventual inheritance.

Signaling theory

In contrast to the notion that migrants are motivated by a household strategy, the more recent migration literature suggests that migration may be oriented more towards the individual self-interest of migrants. Rapoport and Docquier (2005) point out that sending remittances is not simply predicted by the migrants' and households' characteristics. Instead, the specific intentions of migrants are also very important when studying remittance behaviour. Labour migration usually occurs in less developed areas, and is often motivated by the desire to fill low-level jobs in the informal sector. Job security and wages are easily affected by the labour supply pool, as well as economic cycles in the receiving areas. Under such unpredictable conditions, migrants might see themselves as sojourners, who, from the very beginning of their migration journey, intend to return to their origin community. In order to keep the return option open, migrants need to maintain a close relationship with the place of origin. They do so by securing membership rights in their community or household during their period of absence (Osili, 2004).

To ensure those membership rights, migrants may choose to use remittances instrumentally. Perhaps before they can return, migrants must first remit some money to avoid losing face or alienating family members at the place of origin. In this case, sending remittances serves as a signal or gesture. While any amount sent could signal the intention to ultimately return, if the migrant is following a co-insurance or investment motive, a sufficiently large amount of money has to be sent to fulfil obligations to the household. Conversely, if the migrant is sending only small sums, those remittances are probably only token amounts intended to help maintain membership rights in the origin household. Such small amounts are undoubtedly lower than amounts sent by migrants remitting to fulfil co-insurance or investment obligations.

Indeed, not all households follow investment or co-insurance strategies when sending migrants. Migration may simply reflect a young adult's desire to explore opportunities for advancement when facing limited chances for receiving post-primary education. Some may see migration as an avenue for gaining valuable life experiences. In such a context, remittances may help meet the households' subsistence needs (Itzigsohn, 1995), but are not necessarily part of an arrangement between migrants and households. In sending remittances, even in small amounts, migrants can reinforce their membership in an origin community or household to which they someday hope to return.

Implications of household wealth in sending remittances

Having discussed two perspectives on the role of remittances in return migration, the authors now conjecture about the relationship between those two factors as they are conditioned by household socio-economic status. According to the perspective of the new economics of labour migration, remittances are not only sent in response to market failures, but are also related to the notion of relative deprivation. According to this idea, household utility is not only a function of absolute income but also of income position vis-à-vis other households within a reference group (Stark and Taylor, 1989). Members of households expecting income gains from migrants may have initially been influenced by their perceived level of disadvantage within the wealth distribution of their community, and migrant remittances are an avenue for advancing ahead of other households.

Alternatively, from a signaling perspective, migrants intending to return may still see their reference group as comprising the people who remain identified with their households and communities in the place of origin. The flow of money from the migrants to their home communities not only ensures that their social standing at home is validated, even if they are not present, but it also cements their emotional attachment to distant kin. These migrants are not necessarily concerned with the economic status of their origin household vis-à-vis other households, they simply send money to maintain their membership claims. Indeed, if migrants switch to a new reference group associated with their place of destination, that is, they experience reference group substitution, their motivation to remit diminishes (Sana, 2005). This is irrespective of how their household compares to other households in the community with regard to wealth. Moreover, if they send money, it is not necessarily an amount that can significantly improve the households' position in the community's wealth distribution.

Based on those two theories, one can predict that migrants may have different motivations in sending remittances, depending on the wealth status of their origin household. According to relative deprivation theory, poorer households should feel the greatest pressure to receive remittances relative to other households in their community or their reference group. Not having enough opportunity to follow an investment motive, they would probably opt for a consistent source of insurance because of their relatively disadvantaged position. They probably are not able to follow a signalling model when sending remittances because of their greater family need, which necessitates large transfers. In such cases, sending remittances and the amount of remittances sent would not lead to an increased likelihood of return. Migrants from poorer households may also follow a pattern of chain migration, whereby the return of one migrant encourages the migration of another one who assumes remittance responsibilities.

Furthermore, households situated in the middle of the wealth distribution arrangement are not struggling to meet basic subsistence needs unlike poorer households. They may be under pressure to keep up with the wealthiest households and seek capital gain in the form of remittances prior to receiving returning migrants. Alternatively, migrants from those households may simply have left to seek opportunity for their own sake. During their migration journey, their need to keep the return option open, especially during market failures at destination, is probably more important to their return when compared with the household's relative wealth position. With the fear of market failure and an intention to return, they need to keep close ties with their place of origin through remittances to claim their continuous membership in their origin household during their absence. Therefore, sending remittances – even nominal amounts – might be associated with their intention to eventually return.

For the wealthiest households, investment is the most likely household strategy, and the need for co-insurance is far less likely. Because of their wealth, those households have a reserve to draw upon in times of crisis, thus their need for risk insurance is relatively low. Moreover, those households probably have the most access to capital, and are in the best position to invest in the migrants' education. Also, they are likely to have access to property which they can use as strategic bequests. For those households, return migration is unlikely to be affected by remittances, except in cases in which households own property for which a returning migrant has been sending remittances to maintain.

Hypotheses

Given the preceding theoretical discussion, the present paper will examine two hypotheses. The first hypothesis is that, other things being equal, sending remittances is associated with return migration. If so, the authors will examine whether the NELM or signalling model is supported. If NELM is supported, sufficiently large amounts of money would need to be sent for the migrant's obligation to be paid. Otherwise and if only small amounts are sent, those might be token amounts which the migrant may hope to use to secure membership rights in the household. It may be necessary to send such money before returning.

Our second hypothesis is that the effect of sending remittances on return migration is conditional on household wealth. This hypothesis is a general one which can be broken up into many smaller ones. Poor households, which are likely to be following a co-insurance arrangement, are not expected to have a remitting migrant return. This is the case because their economic situation may require them to have a co-insurer available in a location with a different risk profile than their own. For middle-wealth households, it is expected that sending remittances would be positively related to return. If return is related to larger remittance amounts, it is likely that migrants are responding to the relative deprivation of their household in the wealth distribution of the community. Smaller amounts are more indicative of a signalling motive, as elaborated in the first hypothesis. Wealthy households are expected to follow an investment arrangement, thus return following remittances is expected only in cases in which the household owns inheritable property that is sought after by the migrant.

Having reviewed the relevant literature on remittances and return migration, and having discussed different hypotheses, one now considers the distinctive characteristics of the current research setting, and the ways in which contextual factors can mediate or intervene between sending remittances and return. In what follows, the authors describe the research setting, the data, the operationalization of variables and the analytical approach.

Setting

Nang Rong is a rural, agrarian district located near the Cambodian border in Buri Ram Province in north-eastern Thailand. The district was a frontier region until the 1970s, when road construction, electrification, telecommunications improvements and migration substantially changed the way that people lived (Curran, 1995).

Around that time, the pattern of migration changed from primarily in-migration to primarily out-migration. Most people in Nang Rong live in villages arranged into clusters of dwelling units that include an average of about 100 households (Rindfuss and others, 2003). The main occupation is subsistence rice farming, although increasingly farmers are growing rice and upland cash crops such as cassava to sell on the market. Overall the district is poor; although there is a range of wealth, and some villagers live well even by the standards of developed countries.

For the past several decades, the vast majority of job growth in Thailand has been concentrated in urban areas (Curran, 1995), and tremendous numbers of migrants have flowed into cities seeking jobs in the service, manufacturing and construction sectors. Bangkok and the central region of the country are major migration destination areas, while the north-eastern region is one of the major sending areas (Jampaklay, 2003). In Thailand, out-migration is an effective way for low-income households to quickly overcome a shortage of income, and remittances constitute a large portion of received income (Osaki, 2003). Often migration is only temporary, and typically it is seasonal or cyclical (Entwisle and others, 2003). Many migrants travel back and forth between their place of origin and their place of destination, thereby keeping close connections with their households and communities. Some migrants choose to settle in migrant destinations and may never return.

Data and sample

Data used in this article comes from the second and third waves of the longitudinal study of social change conducted in Nang Rong. The first wave of data was collected in 1984, when a household survey was administered to all households in 51 villages. Follow-up waves occurred in March 1994 and 2000, sometime between March and June, when complete censuses were again conducted in each of the villages included in the original sample. Each household survey collected data on all household members, including reports for anyone who was away at the time of the survey. Data were also collected on migration, monetary and in kind remittances, land and household assets, among other things. In addition, life history data were collected on anyone aged 13-41 who was located in the village in 2000. Life history data include information on individual migration histories since a person was 13 years of age.

Since the data used for this study are both longitudinal and origin-based, they avoid the problems inherent in many studies of return migration. Because of the geographical scatter of migrant-sending communities, many destination-based studies have trouble following up return migrants. Some such studies (for example, Borjas, 1989) operationalized return migrants as those who left the sample, with the assumption that they returned to their origin community. This kind of measure wrongly attributes migrants who moved to locations other than their origin community as returnees. Destination-based studies with a longitudinal design have an easier time accurately identifying return migrants, but those studies have difficulty measuring who is at risk of being a migrant in the first place.

Origin-based approaches have limitations as well. For example, the authors' data use household reports for any household members known to be migrants in 1994; they then trace their residence in the year 2000. This process requires that information about the migrant comes from the origin household, yet this information is not always accurate.[1] Further, ascertaining migrants' motives for sending remittances cannot be addressed directly. Therefore, motives for sending remittances are inferred by studying the impact of sending remittances on return migration.

Sample

The authors limited their sample in several ways. First, the age range was restricted to those aged 13-55 years in 1994. This restriction appeared reasonable because people under 13 years of age are children and are probably migrating along with their parents. Moreover, migration begins around this age when compulsory education ends (Rindfuss and others, 2005). Also, people over 55 years have probably ended or are approaching completion of their working life. Preliminary analysis indicates that by the time they reach that age, they are unlikely to change their residence. Second, the sample was restricted to only those migrants who had been gone for at least one year prior to the 1994 survey.[2] This step ensured that the migrants had had enough time to stabilize their economic situation so that they were able to send remittances. Because data on remittances were measured one year prior to the 1994 survey, this step also ensured that each migrant was at risk of exposure to sending remittances throughout the entire duration.

Limiting the sample in this fashion was likely to eliminate some portion of circular migrants, but it would not necessarily have eliminated all circular migrants. The authors argue that this research design helped eliminate mainly seasonal migrants because they are the most likely to undertake migration spells lasting less than one year. In the light of past research findings that over half of all migrants in north-eastern Thailand are seasonal, repeat, or temporary migrants (Chamratrithirong and others, 1995), the authors felt it necessary to make a distinction between seasonal migrants and other types of circular migrants. It might be important to note that circular migration is defined here as a migration episode lasting two or more months and which starts and ends in the origin community. Seasonal migrants are defined as those who follow a circular migration pattern annually or semi-annually for a few months during the agricultural off-season.

There are many types of migration strategies that involve circular movement. For example, a migrant may move to an urban area to find employment as a construction worker. Such a migrant may return to the village after a few years when the construction project is finished. While the sample excluded a portion of circular migrants, such as seasonal agricultural workers, it did not exclude all circular migrants. In fact, the migrants excluded from the present analysis constituted less than 20 per cent of the overall population of migrants and probably included mainly short-term migrants who are gone for less than one year.

Operationalization

Dependent variable

As figure 1 illustrates, the Nang Rong data were well-suited for studying return migration because three panels of data were collected. This design made it possible to identify migrants by examining changes in residence between the first two waves of data. In this paper, migrants are defined as individuals who were household members in the first wave of data (1984) and who were living outside of the village for at least one year prior to the second wave of data (1994). Return migration, the dependent variable, was established using the third wave of data (2000). Return migrants are defined as those identified as a migrant in the 1994 wave of data collection, who were in the village at the time of the 2000 household survey.

Return migration was measured as a dichotomous variable equal to one, if the migrant returned, and equal to zero otherwise. Table 1 shows the frequency distribution of return migration for the entire sample and for migrants from households in three categories of household wealth. Results revealed that overall, just under one fifth (18.65 per cent) of all migrants returned. Moreover, migrants from middle-wealth households were more likely to return than households at the tails of the wealth distribution, although the differences are small.

Figure 1. Study sample across survey waves

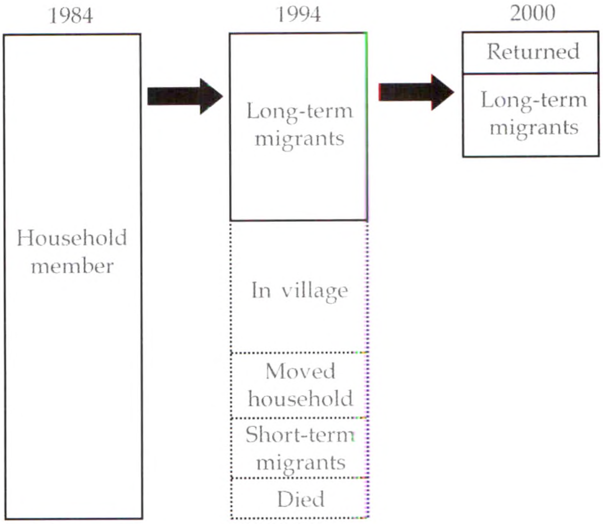

Table 1. Frequency distribution of return migration for migrants aged 13-55 in 1994

Category	Full sample		Lowest wealth		Middle wealth		Highest wealth	
	Freq	Per cent	Freq	Per cent	Freq	Per cent	Freq	Per cent
Did not return	5 318	81.35	1 303	81.49	2 768	80.96	1 247	82.09
Did return	1 219	18.65	296	18.51	651	19.04	272	17.91
Totals	6 537	100.00	1 599	100.00	3 419	100.00	1 519	100.00

One issue with the operationalization of return migration is that it may simply be one stop in an ongoing cycle of circular migrations. A preliminary analysis (results not shown) of the circular migration patterns was conducted based on the present sample. Using data from the 2000 life-history calendar, the authors examined the circular migration history of anyone who was located in the village in 2000 (which, in this sample, includes only return migrants). In the life-history data, a migration episode is operationalized as residence outside of the village for two or more consecutive months. Of the cases (N= 1,110) in the sample, about 77 per cent were matched (within the appropriate age range) to a life-history record.

While it is possible that return migration is only the end of one migration circulation episode and that future moves are forthcoming, results show that multiple movements are uncommon among return migrants. Nearly 70 per cent of those migrants had only one migration episode since they were 13 years old, and another 20 per cent had only two migration episodes. Migration durations tended to be fairly lengthy. Just under half were 6 or fewer years in duration, while three fourths were nearly 10 or fewer years in duration.

The authors also examined circulation among non-returning migrants, although it was only possible to do so indirectly. Since life-history data were not available for those living outside of the village in 2000, these data could not be used to examine multiple movements. Instead, authors examined the years since the migrant last lived with the household, using 2000 as a reference point. Migrants whose duration of absence was less than six years must have returned to the village sometime between 1994 and 2000. Results (not shown) suggest that just over 35 per cent of those migrants had been gone for fewer than 6 years.[3] However, the nature and duration of their return is unclear. Those migrants may simply have returned for a short visit, perhaps to help their household with the rice harvest, or to care for an ailing parent.

The second issue related to the survey design is that the effect of remittances sent between 1994 and 2000 could not be measured, some of which may have been sent or brought back before the migrant's return. In considering that remittance data were available only for a one-year period exactly prior to return, remittances sent any time after that year, but preceding return, could also have influenced the migrant's return decision. Unfortunately, this remittance flow could not be measured, so the effect of remittances on return migration might have been underestimated. The authors argue that migrants send remittances in a more-or-less regular fashion; for example, migrants who made remittances in 1993 (which the data captured) were also likely to have sent remittances in all the other years during a migration episode. Indeed, previous literature has shown this to be the case. According to Stark (1991), remittances are often sent on a regular basis, rather than on an irregular one.

Since the sample is limited to migrants whose households were in the village in all three waves of data, another problem is that our design excludes cases in which an entire household moved out of the village. Migration and return are operationalized using changes in residence as reported by household members living in the village. Since migrants from households that moved had no household living in the village in 2000, there is no way of identifying migrants from those households as returnees. Thus, the authors were forced to exclude them from the analysis. Sample attrition due to the moved households is low, accounting for 11 per cent of households between 1984 and 1994, 7 per cent between 1994 and 2000 and 15 per cent overall between 1984 and 2000. In results not shown, the authors compared migrants from their sample to demographically matched migrants (aged 13-55 who were gone for at least one year) from moved households (N=203). Because the data for 1984 are not as detailed as subsequent waves of data, the authors examined households that had moved between 1994 and 2000, using their 1994 characteristics.

Although it is unlikely that many migrants from moved households would have returned to their origin village, the authors caution that some of the variables on which there are differences may be slightly biased in the present statistical results. While one finds differences in some characteristics between moved and non-moved households, overall the majority of variables are similar across those groups. Specifically, differences were found with respect to characteristics, such as the presence of a migrant's parents, household wealth and variables associated with farming (ownership of land and agricultural equipment; prevalence of rice farming). As differences were slight, no substantial impact on the results was anticipated.

Remittances

Sending remittances is the key independent variable in the present analysis. Because return could have occurred anytime between 1994 and 2000, all independent variables in this analysis were measured in 1994 or earlier. This action ensured that the timing of the dependent variable did not occur prior to the measurement of the independent variables, while still keeping a relatively short timespan between the two time periods.[4] Data on several types of remittances were used as well as two directions of remittance flow. The data set included not only migrant-to-household remittances, but also household-to-migrant transfers. The advantage of using two-directional data is that the NELM theory has implications for both directions of support, and information might be lost if one direction is ignored.

Remittance data were available for both monetary and in kind remittances.[5] Having data on two types of remittances is theoretically interesting, since in-kind remittances may measure social ties between households and migrants that go beyond general monetary need, and may suggest an awareness of more specific needs concerning whoever is receiving the remittances.

In kind data (both migrant-to-household and household-to-migrant) came from a series of survey items that asked whether remittances in the form of clothes, food (totaling 100 baht[6] or more), household items, electrical appliances, or vehicles were sent in the 12 months prior to the 1994 survey. Authors operationalized each type of remittance as a dichotomous variable equal to one, if the above item was sent, and zero otherwise. Data on monetary remittances came from a similar survey item about whether particular amounts of money (measured in Thai baht) were sent (both migrant-to-household and household-to-migrant). The authors operationalized monetary remittances as a series of dichotomous variables indicating whether money was sent in each of the following categories: no money, less than 1,000 baht, between 1,001 and 3,000 baht, between 3,001 and 5,000 baht, and more than 5,000 baht. Distinguishing the effect of different remittance amounts is important, because it helps to differentiate an investment/co-insurance motive from a signalling motive. In Thailand, remittance amounts on the order of 1,000 baht (about $33 as of December 2010) or less per year are considered rather small, even by rural standards. For the co-insurance motive, higher amounts of remittances related to return were predicted, while for the signalling model, lower amounts were expected.

Results show that migrant-to-household remittances are more common than household-to-migrant remittances. The sending of remittances is also clearly related to household wealth, as evidenced by the rising proportion of remittances of larger monetary amounts and more expensive items as wealth increases.[7] Over half the migrants (full sample) sent some form of monetary remittances, but food, clothing, and household goods or appliances were also popular remittance items. It is noteworthy that the highest remittance category (more than 5,000 baht) was the amount most commonly sent (see table 2). This is true across all household wealth categories.

Household wealth

Following work by Filmer and Pritchett (2001), the authors used a set of household assets to construct an index of household wealth using principal components analysis.[8] Based on this index, each household was grouped into one of three categories. Because wealth tends to be concentrated in the hands of relatively few households, fewer households were included in the highest category. Households in the bottom third would be considered to be in the lowest category of the wealth distribution, those in the 34th to 79th percentiles were considered to be in the middle, while those in the top fifth would be considered as the highest category. Table 2, which shows descriptive statistics for all independent variables,

Table 2. Descriptive statistics for migrants aged 13-55 in 1994

Variable	Full sample		Lowest wealth		Middle wealth		Highest wealth	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Remittance variables								
Migrant-to-household monetary remittance								
Migrant sent less than 1,000 Baht	0.121	0.326	0.138	0.345	0.129	0.335	0.084	0.278
Migrant sent between 1,001 and 3,000 baht	0.127	0.333	0.140	0.347	0.126	0.332	0.117	0.321
Migrant sent between 3,001 and 5,000 baht	0.097	0.296	0.096	0.294	0.097	0.296	0.099	0.298
Migrant sent 5,001 or more baht	0.199	0.400	0.168	0.374	0.191	0.393	0.252	0.434
(Migrant sent no money)	0.456	0.498	0.459	0.498	0.458	0.498	0.448	0.497
Migrant-to-household in kind remittance								
Migrant sent clothing	0.326	0.469	0.313	0.464	0.306	0.461	0.382	0.486
(Migrant did not send clothing)								
Migrant sent food (totaling 100 baht or more in value)	0.333	0.471	0.328	0.470	0.317	0.465	0.376	0.485
(Migrant did not send food)								
Migrant sent household goods or electrical applicances	0.211	0.408	0.169	0.375	0.207	0.405	0.264	0.441
(Migrant did not send goods or applicances)								
Migrant sent vehicles	0.009	0.095	0.006	0.079	0.007	0.085	0.016	0.125
(Migrant did not send vehicles)								
Household-to-migrant remittance								
Household-to-migrant any remittance	0.194	0.395	0.170	0.376	0.178	0.382	0.254	0.436
(Household did not send remittance)								

(continued)

Table 2. *(Continued)*

Variable	Full sample		Lowest wealth		Middle wealth		Highest wealth	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Demographic variables								
Age	25.821	6.912	25.573	7.206	25.643	6.942	26.482	6.479
Male	0.544	0.498	0.540	0.499	0.551	0.497	0.532	0.499
(Female)								
Details of migration								
Number of years gone	4.094	2.729	3.907	2.634	4.076	2.740	4.330	2.785
Migration destination is north-eastern Thailand	0.339	0.473	0.341	0.474	0.337	0.473	0.342	0.474
Migration desintation is not in greater Bangkok or north-eastern Thailand	0.264	0.441	0.250	0.433	0.267	0.442	0.273	0.446
(Migration destination is greater Bangkok)	0.397	0.489	0.410	0.492	0.396	0.489	0.385	0.487
Human capital								
Education								
Less than primary school	0.351	0.477	0.397	0.489	0.377	0.485	0.245	0.430
Higher than primary school	0.179	0.383	0.080	0.271	0.129	0.335	0.394	0.489
(Primary school)	0.470	0.499	0.523	0.500	0.494	0.500	0.361	0.481
Occupation								
Agricultural occupation	0.350	0.477	0.402	0.490	0.377	0.485	0.236	0.425
(Non-agricultural occupation)								

(continued)

Table 2. *(Continued)*

	Full sample		Lowest wealth		Middle wealth		Highest wealth	
Variable	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Co-residence								
Location of parents								
Both parents in origin household	0.605	0.489	0.593	0.491	0.592	0.492	0.648	0.478
Only mother in origin household	0.188	0.391	0.183	0.387	0.195	0.396	0.177	0.382
Only father in origin household	0.053	0.224	0.061	0.239	0.053	0.224	0.045	0.207
(Neither parent lives in the household)	0.154	0.361	0.163	0.369	0.160	0.367	0.130	0.337
Marriage / spouse location								
Spouse lives in origin household or village	0.020	0.141	0.017	0.129	0.018	0.132	0.029	0.168
Spouse is a migrant in same location	0.358	0.479	0.383	0.486	0.359	0.480	0.330	0.471
Spouse is a migrant in different location	0.043	0.204	0.041	0.198	0.047	0.212	0.038	0.190
Migrant is divorced or widowed	0.024	0.152	0.021	0.142	0.024	0.152	0.026	0.160
Spouse location unknown	0.120	0.325	0.142	0.349	0.121	0.326	0.096	0.295
(Migrant was never married)	0.437	0.496	0.398	0.490	0.434	0.496	0.484	0.500
Location of children								
At least one of the migrant's children lives in household	0.026	0.158	0.027	0.162	0.024	0.152	0.029	0.168
(Migrant's children do not live in the household)								

(continued)

Table 2. *(Continued)*

	Full sample		Lowest wealth		Middle wealth		Highest wealth	
Variable	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Household economy								
Natural log of amount of land owned (in 1,000 square wa)	7.879	3.984	7.712	4.166	7.574	4.322	8.742	2.651
Household grows rice	0.796	0.403	0.846	0.361	0.803	0.398	0.729	0.445
(Household does not grow rice)								
Household owns equipment	0.183	0.387	0.118	0.323	0.167	0.373	0.289	0.453
(Household does not own equipment)								
Bottom 33rd percentile of wealth distribution	0.232	0.422	-	-	-	-	-	-
Highest 20th percentile of wealth distribution	0.245	0.430	-	-	-	-	-	-
(Middle 34th – 79th percentile of wealth distribution)	0.523	0.500	-	-	-	-	-	-
Household demographics								
Number of people living in the household	2.598	1.843	2.712	1.830	2.497	1.839	2.704	1.854
Number of migrants	2.363	1.754	2.418	1.830	2.361	1.752	2.310	1.672
N	6537		1599		3419		1519	

demonstrates that most households (full sample) were in the middle category (52 per cent), while households in the lowest and highest categories each made up about a quarter of the households.[9]

Control variables

Control variables included measures of characteristics of the migrant (i.e., demographic variables, human capital and residential co-residence variables) and characteristics of the household (i.e., household economy and composition). Demographic variables were age, sex, migration duration and migration destination. Thai gender norms tend to bind women to their origin household through expectations that women should maintain close kinship ties and care for parents in their old age (Curran, 1995; DeJong, 2000). Authors measured migration duration as the number of years from the time of the 1994 survey that the migrant had been away. Massey (1987) argued that greater exposure to the destination society gradually increases a migrant's ability to handle risk, which is expected to decrease the likelihood of return. Thus, men who are long-term migrants might be less likely to return.

Migration destination was measured as a series of dummy variables for whether the migrant was living in the north-eastern region of Thailand, the greater Bangkok metropolitan area,[10] or some other location. Table 2 shows that almost 40 per cent of the migrants (full sample) lived in greater Bangkok, while about one third were living in the north-eastern region. The rest of the migrants, who accounted for over a quarter of the sample, were living in other parts of Thailand, belonging to the urban sector. Thus, over two thirds of migration flows were rural-to-urban and the other one third rural-to-rural. Bangkok migrants were expected to be the least likely to return because Bangkok offers the most employment opportunities and the potential for higher pay than other parts of Thailand.

Human capital variables included education and occupation. Human capital was expected to be negatively associated with return, following research that argues for a skills bias in return migration (Borjas, 1989; Borjas and Bratsberg, 1996). The authors measured education as a series of indicator variables measuring whether a migrant had: less than a primary school education, only a primary school education, or a higher than primary school education. Occupation was also coded as a dummy variable indicating whether the migrant worked in an agricultural occupation.[11] Overall, about 35 per cent of migrants tended to have the lowest level of education, and about the same percentage were employed in agriculture.

As one would have expected, there were differences relating to the wealth of the migrant's origin household. Migrants from the poorest households had the lowest proportion, with a higher than primary school education (8 per cent), while those in the middle of the wealth distribution had the next lowest proportion (12 per cent). Those coming from the wealthiest households had by far the highest proportion with a higher than primary school education (39 per cent). There is a similar pattern for the lowest educational category, with the poorest households having almost 40 per cent of their migrants in this category, compared with about 25 per cent in the wealthiest households. Occupational differences also seemed to be related to household wealth. While 40 per cent of migrants from poorer households worked in agriculture, only 24 per cent of migrants from wealthier households did so. Migrants from middle-wealth households fell in between poorer and wealthier households.

Co-residence variables included separate measures for the location of the migrant's parents, spouse and children. The authors measured whether the migrant's parents were located in the origin household and specified one of the following: whether both parents lived in the household; only the migrant's mother lived in the household; only the migrant's father lived in the household; or neither of the migrant's parents lived in the household. Overall, both parents lived in the home household in about 60 per cent of the cases, while households with neither parent living in them constituted the minority.

The authors also controlled for whether the migrant's spouse and/or children lived in the origin household, with the expectation that return would be most likely if they lived there. In measuring spouse location, the authors also included the marital status of the migrant. Thus, whether the migrant was divorced or widowed, never married, or currently married was measured, as well as whether the spouse lived in the origin household or village; was a migrant in the same location as the migrant; a migrant in a different location; or whether the location was unknown. Overall, most migrants were never married (44 per cent), while many were married and living in the same migration location together with their spouse (36 per cent). Also controlled for was whether a migrant had a child who lived in the home household, which was rare.[12]

One downside of the design used here was that the effects of changes on return migration in the migrant's characteristics (such as family status, education, or occupation) during that time period could not be captured. In a separate analysis, the authors investigated the effect of some of those changes on return migration. Using binary logistic regression, the authors found that migrants who experienced a change in their marital status (married, divorced/separated/widowed, other) were more likely to be return migrants compared with migrants who did not experience any such change. Data limitations did not allow the authors to determine whether changes in marital status preceded return migration or vice versa. Therefore, it cannot be argued that those changes caused a return to occur, although those are clearly associated with one another.

Turning to household-level measures, the authors controlled for aspects of the household's economy, including the natural log of the amount of land owned by the household (in square wa[13]), whether or not the household grew rice, and whether or not the household owned equipment (large tractor, small tractor, rice thresher, water pump, or electric generator). Generally, one expects that ownership of land and equipment will draw return migrants who have been sending remittances as a form of investment in the household's property.

The authors also controlled for characteristics of the household demographics, including a count of the number of people living in the household and the number of migrants from the household. As controls for specific family members of the migrant (spouse, parents, or child) were already included in the model, including them again would have resulted in double counting. To rectify this problem, those family members were excluded from the count of the number of people living in the household. This approach might make descriptive statistics for these variables look somewhat small. One expects that larger households would have less need to make up for lost labour from migrants, and therefore migrants would be less likely to return. Alternatively, migrants may not want to return to large households in order to avoid crowded conditions (Edwards and others, 1994).

The literature on migrant networks suggests that migration streams extend to similar migration destinations, thereby creating more contact with migrants from the same origin communities. Those migrants provide a measure of security and access to such things as employment and housing which lowers the risk of migration (Massey and Basem, 1992; Massey and others, 1993; Roberts and Morris, 2003). Therefore, one expects return migration to be negatively related to the number of migrants from a household, since having more contacts at the destination would make it easier for a migrant to stay there.

Analytical approach

Statistical regression modelling was used to determine the independent effect of remittances and various control variables on the probability of return migration. Because return migration, the dependent variable in this analysis, was measured as a dichotomous variable, we used a binary logit model. The authors estimated four logit models: a model for the full analytical sample and separate models for households in the lowest, middle and highest categories of household wealth.

Since multiple migrants can come from the same household, and multiple households are located in the same village, the data were clustered and thus not independent of each other. Clustering artificially lowers standard errors associated with coefficients, thereby overestimating the significance of estimates. A multilevel model was used to correct for this problem, which helped rectify estimates of standard errors (for details, see Bryk and Raudenbush, 1992; Raudenbush and Bryk, 2002; and Snijders and Bosker, 1999).

For all the models, the dependent variable was a binary response that individual migrant *i*, who is a member of household *j* in village k is a return migrant (1 = return migrant, 0 = non-return migrant). The probability that the response was equal to 1 was defined as $p_{ijk} = \Pr(y_{ijk} = 1)$, where the standard assumption was used that y_{ijk} has a binomial distribution. The combined three-level model took the following form:

$$\ln\left[\frac{p_{ijk}}{1 - p_{ijk}}\right] = \gamma_0 + \sum_{h=1}^{p}\gamma_{h00}x_{hijk} + \sum_{g=1}^{q}\gamma_{g0}w_{gjk} + U_{0k} + V_0 \qquad (3)$$

where:

γ are regression coefficients;

p is the number of x migrant variables;

q is the number of w household variables;

V_0 and U_{0k} are random effects accounting for variation at the village and household levels, respectively. The standard assumption was applied that both have an expected value of zero, while V_0 has a variance equal to φ^2, and U_{0k} has a variance of τ^2.

The SAS GLIMMIX macro was used to estimate fixed and random effects. Random effects were determined through empirical Bayes estimation, which calculates random coefficients by using data from the group level of analysis to which the effect is ascribed, and the fact that the error term is a normally distributed random variable with a mean of zero (Bryk and Raudenbush, 1992; Raudenbush and Bryk, 2002; and Snijders and Bosker, 1999).[14]

Table 3. Multilevel binary logit estimates of return migration in 2000 for migrants aged 13 - 55 in 1994

Variable	Coefficient	Std error	Odds ratio
Intercept	-0.745***	(0.234)	0.475
Remittance variables			
Migrant-to-household monetary remittance			
Migrant sent less than 1,000 baht	0.248*	(0.114)	1.281
Migrant sent between 1,001 and 3,000 baht	0.223*	(0.109)	1.250
Migrant sent between 3,001 and 5,000 baht	0.121	(0.121)	1.129
Migrant sent 5,001 or more baht	0.031	(0.107)	1.031
(Migrant sent no money)			
Migrant-to-household in kind remittance			
Migrant sent clothing	0.224*	(0.114)	1.251
(Migrant did not send clothing)			
Migrant sent food (totaling 100 baht or more in value)	-0.388***	(0.108)	0.678
(Migrant did not send food)			
Migrant sent household goods or electrical appliances	0.092	(0.100)	1.097
(Migrant did not send goods or applicances)			
Migrant sent vehicles	0.449	(0.299)	1.567
(Migrant did not send vehicles)			
Household-to-migrant remittance			
Household-to-migrant sent remittance	0.106	(0.089)	1.112
(Household did not send remittance)			
Demographic variables			
Age	0.010	(0.007)	1.010
Male	-0.335***	(0.065)	0.715
(Female)			
Details of migration			
Number of years gone	-0.18***	(0.015)	0.835
Migration destination is north-eastern Thailand	-0.447***	(0.095)	0.640
Migration destination is not in greater Bangkok or north-east	-0.082	(0.082)	0.922
(Migration destination is greater Bangkok)			
Human Capital			
Education			
Less than primary school	0.342***	(0.095)	1.407
Higher than primary school	-0.315**	(0.104)	0.730
(Primary school)			
Occupation			
Agricultural occupation	-0.161	(0.088)	0.851
(Non-agricultural occupation)			

(continued)

Table 3. *(Continued)*

Variable	Coefficient	Std error	Odds ratio
Co-residence			
Location of parents			
Both parents in origin household	0.169	(0.120)	1.184
Only mother in origin household	0.201	(0.132)	1.223
Only father in origin household	-0.095	(0.207)	0.909
(Neither parent lives in the household)			
Marriage / spouse location			
Spouse lives in origin household or village	1.644***	(0.204)	5.177
Spouse is a migrant in same location	-0.451***	(0.091)	0.637
Spouse is a migrant in different location	-0.407*	(0.169)	0.665
Migrant is divorced or widowed	-0.515*	(0.231)	0.598
Spouse location unknown	-0.353**	(0.114)	0.702
(Migrant was never-married)			
Location of children			
At least one of the migrant's children lives in household	0.476*	(0.220)	1.610
(Migrant's children do not live in the household)			
Household economy			
Natural log of amount of land owned (in 1,000 sq. wa)	0.015	(0.010)	1.015
Household grows rice	0.029	(0.110)	1.030
(Household does not grow rice)			
Household owns equipment	0.247*	(0.105)	1.280
(Household does not own equipment)			
Bottom 33rd percentile of wealth distribution	-0.030	(0.105)	0.970
Highest 20th percentile of wealth distribution	-0.004	(0.097)	0.996
(Middle 34th - 79th percentile of wealth distribution)			
Household demographics			
Number of people living in the household	-0.106***	(0.024)	0.899
Number of migrants	-0.086***	(0.025)	0.917
N		6537	
- 2 LL		31 998.400	
BIC		32 022.400	
AIC		32 004.400	
Random effects	Var Comp	Std Err	ICC
Level-one random effects			
$\mathrm{var}(R_{ij}) = \pi^2/3$	3.29	-	-
Level-two random effects			
$\mathrm{var}(U_{0j}) = \tau^2$	1.008	0.123	0.198
Level-three random effects			
$\mathrm{var}(V_{0j}) = \varphi^2$	0.792	0.017	0.156

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ (two-tailed test).

Abbreviations:
LL = Log Likelihood
BIC = Bayesian Information Criteria
AIC = Akaike Information Criteria

Results

With regard to the results of the regression analysis, table 3 shows the results for the full sample. Results reveal that household-to-migrant remittances have no effect on return, while several migrant-to-household monetary remittances measures had effects on return migration. The odds of migrants returning were about 28 per cent higher for those who sent home less than 1,000 baht, compared with those who did not send remittances. The odds were about 25 per cent higher for those who sent between 1,001 and 3,000 baht.

This result shows that remittances sent prior to return are associated with return migration. However, the amounts sent back were small and probably not consistent with fulfilment of contractual co-insurance or investment obligations. Instead, it is more likely that the migrants were sending these small amounts of money to re-establish or maintain membership in households to which they planned to return. Migrants were also more likely to return if they sent clothing, which may also be linked to the maintenance of membership rights in the origin household.

Oddly, migrants were less likely to return if they sent food. Qualitative work by Knodel and Saengtienchai (2005) in the north-eastern and central regions of Thailand suggests that gifts of food are commonly brought by visiting migrants. Such exchanges are unlikely to be of great economic value, rather they are brought as token gifts to commemorate special occasions such as Buddhist lent or the Songkran festival (the three-day Thai new year period observed in April).

Upon closer examination by household wealth, the relationship between sending remittances and return appears more complicated than the model of the full analytical sample would suggest. Table 4 shows regression results of separate models for households at the lowest, middle and highest levels within the overall distribution of household wealth. Those results show that the significant effect on return migration of a migrant sending remittances holds only for middle-wealth households. The odds of return for migrants remitting between 1,001 and 3,000 baht were close to 45 per cent higher compared with migrants that did not remit money.

Also, migrants from middle-wealth households were more likely to return if they had sent clothing or vehicles. Because so few vehicles were sent (see table 2), the effect of this variable should be interpreted with caution. The odds of return migration were about 53 per cent higher for migrants who had sent clothing. The finding that migrants who sent food were less likely to return is also present.

Table 4. Multilevel binary logit estimates of return migration in 2000 for migrants aged 13 – 55 in 1994 by household wealth

	Low-wealth households			Middle-wealth Households			High-wealth Households		
Variable	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Intercept	0.418***	(0.509)	1.519	-1.142***	(0.308)	0.319	-0.964***	(0.602)	0.382
Remittance variables									
Migrant-to-household monetary remittance									
Migrant sent less than 1,000 baht	0.424	(0.218)	1.529	0.155	(0.157)	1.168	0.242	(0.287)	1.273
Migrant sent between 1,001 and 3,000 baht	0.307	(0.219)	1.359	0.369*	(0.150)	1.446	-0.400	(0.259)	0.670
Migrant sent between 3,001 and 5,000 baht	-0.067	(0.258)	0.935	0.317	(0.165)	1.374	-0.204	(0.262)	0.816
Migrant sent 5,001 baht or more	0.167	(0.240)	1.182	-0.006	(0.152)	0.994	-0.038	(0.213)	0.963
(Migrant sent no money)									
Migrant-to-household in kind remittance									
Migrant sent clothing	-0.045	(0.250)	0.956	0.422**	(0.154)	1.526	0.004	(0.254)	1.004
(Migrant did not send clothing)									
Migrant sent food (totaling 100 baht or more)	-0.409	(0.247)	0.664	-0.508***	(0.145)	0.602	-0.193	(0.237)	0.824
(Migrant did not send food)									
Migrant sent household goods or electrical applicances	0.061	(0.216)	1.063	0.134	(0.141)	1.143	0.003	(0.210)	1.003

(continued)

Table 4. *(Continued)*

	Low-wealth households			Middle-wealth Households			High-wealth Households		
Variable	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
(Migrant did not send goods or applicances)									
Migrant sent vehicles	0.133	(0.776)	1.142	0.931*	(0.426)	2.537	-0.055	(0.555)	0.946
(Migrant did not send vehicles)									
Household-to-migrant remittance									
Household-to-migrant sent remittance	0.374	(0.198)	1.453	0.070	(0.127)	1.073	0.081	(0.179)	1.084
(Household did not send remittance)									
Demographic variables									
Age	-0.028	(0.015)	0.973	0.021*	(0.010)	1.021	0.019	(0.016)	1.019
Male	-0.374**	(0.135)	0.688	-0.293**	(0.091)	0.746	-0.431**	(0.142)	0.650
(Female)									
Details of migration									
Number of years gone	-0.221***	(0.032)	0.802	-0.177***	(0.020)	0.838	-0.141***	(0.031)	0.868
Migration destination is north-eastern Thailand	-0.441*	(0.196)	0.643	-0.561***	(0.135)	0.571	-0.292	(0.199)	0.747
Migration destination is not in greater Bangkok or north-east	-0.337	(0.172)	0.714	0.057	(0.113)	1.059	-0.214	(0.178)	0.807
(Migration destination is greater Bangkok)									
Human capital									
Education									
Less than primary school	0.736***	(0.189)	2.088	0.256*	(0.130)	1.292	0.074	(0.232)	1.077

(continued)

Table 4. *(Continued)*

Variable	Low-wealth households			Middle-wealth Households			High-wealth Households		
	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Higher than primary school	-0.645*	(0.305)	0.524	-0.501**	(0.157)	0.606	-0.208	(0.178)	0.812
(Primary school)									
Occupation									
Agricultural occupation	-0.145	(0.174)	0.865	-0.126	(0.121)	0.881	-0.372	(0.217)	0.689
(Non-agricultural occupation)									
Co-residence									
Location of parents									
Both parents in origin household	0.012	(0.241)	1.012	0.047	(0.161)	1.048	0.673*	(0.321)	1.959
Only mother in origin household	-0.478	(0.292)	0.620	0.204	(0.173)	1.226	0.896**	(0.337)	2.449
Only father in origin household	0.093	(0.389)	1.097	-0.198	(0.278)	0.820	-0.559	(0.628)	0.572
(Neither parent lives in the household)									
Marriage / spouse location									
Spouse lives in origin household or village	1.728***	(0.445)	5.629	1.685***	(0.295)	5.394	1.745***	(0.404)	5.727
Spouse is a migrant in same location	-0.241	(0.198)	0.786	-0.41**	(0.126)	0.663	-0.77***	(0.198)	0.463
Spouse is a migrant in different location	-0.887*	(0.412)	0.412	-0.203	(0.213)	0.816	-0.623	(0.431)	0.536
Migrant is divorced or widowed	-0.875	(0.519)	0.417	-0.576	(0.338)	0.562	-0.088	(0.423)	0.915
Spouse location unknown	0.124	(0.224)	1.132	-0.478**	(0.158)	0.620	-0.75**	(0.281)	0.472
(Migrant was never-married)									
Location of children									
At least one of the migrant's children lives in household	0.841	(0.477)	2.318	0.399	(0.309)	1.490	0.502	(0.481)	1.652
(Migrant's children do not live in the household)									

(continued)

Table 4. *(Continued)*

	Low-wealth households			Middle-wealth Households			High-wealth Households		
Variable	**Coefficient**	**Std error**	**Odds ratio**	**Coefficient**	**Std error**	**Odds ratio**	**Coefficient**	**Std error**	**Odds ratio**
Household economy									
Natural log of amount of land owned (in 1,000 *sq.wa)*	0.007	(0.022)	1.007	0.020	(0.013)	1.020	-0.010	(0.034)	0.990
Household grows rice	-0.140	(0.267)	0.869	0.130	(0.150)	1.139	0.142	(0.228)	1.152
(Household does not grow rice)									
Household owns equipment	-0.003	(0.265)	0.997	0.357*	(0.146)	1.430	0.230	(0.214)	1.258
(Household does not own equipment)									
Household demographics									
Number of people living in the household	-0.082	(0.050)	0.921	-0.112***	(0.032)	0.894	-0.127*	(0.055)	0.881
Number of migrants	-0.063	(0.052)	0.939	-0.069*	(0.033)	0.934	-0.169**	(0.061)	0.845
N		1599			3419			1519	
- 2 LL		7 989.400			16 685.700			7 719.000	
BIC		8 009.200			16 707.700			7 725.000	
AIC		7 995.400			16 691.700			7 725.000	
Random effects	Var comp	Std err	ICC	Var comp	Std err	ICC	Var comp	Std err	ICC
Level-one random effects var(R_{ij}) = $\pi^2/3$	3.29	-	-	3.29	-	-	3.29	-	-
Level-two random effects var(U_{0j}) = τ^2	1.236	0.297	0.053	0.898	0.163	0.033	1.375	0.312	0.054
Level-three random effects var(V_{0j}) = φ^2	1.049	0.048	0.009	0.697	0.021	0.004	1.138	0.052	0.009

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ (two-tailed test)

These findings suggest a signalling motive rather than a co-insurance or investment motive, which is limited to households in the middle of the wealth distribution. This situation has implications for contemporary migration theory, which should be modified to recognize that migrant remittances are not necessarily part of household strategies and might be moderated by economic prosperity at the household level. Further implications of this finding are explored in the concluding section, and one now turns to findings for our control variables.

Demographic variables show that gender, migration duration, and migration destination are important determinants of return migration. Throughout all models, females were consistently found to be more likely to return than males. In the full sample (table 3), the odds of males returning were approximately 28 per cent lower compared with the odds of females returning. Table 4 shows that the effect was comparable for households at various levels within the wealth distribution, with males from middle-wealth households having the lowest odds of returning compared with females. The gender gap in return may be related to Thai norms that bind women to their home households (Curran, 1995; DeJong, 2000) through the expectation that they care for ageing parents.

Migration duration also had a consistent negative effect on return migration. In the full sample, the odds of return decreased by about 16 per cent for an absence of one year from the village. Results across different wealth categories are robust and similar in magnitude. Perhaps Massey (1987) is correct in arguing that greater exposure to the destination society gradually increases a migrant's ability to handle risk, which decreases the likelihood of return. Alternatively, some migrants may depart from their origin communities with the intention of settling in the destination community.

Migration destination behaves in unexpected ways. Compared with Bangkok migrants, migrants in north-eastern Thailand were less likely to return. The odds of them doing so were about 36 per cent lower. The direction of the effect is the same across the household wealth-category equations. It may be that most of those migrants were moving to other rural areas, perhaps to live with a spouse or start a new household through marriage. They may have had no intention of returning from the beginning of their migration journey. Interestingly, some additional analysis (not shown) suggests that migration destination may be a mediating factor in determining whether a migrant returns after sending remittances. The authors estimated a model which excluded migration destination and found several more statistically significant remittance results. One cannot reliably draw any conclusions from those results, because of the potential omitted variable bias associated with excluding the effect of destination.

Human capital variables have slightly different effects on return migration depending on a household's level of wealth. The strongest effects were related to education, while agricultural occupation had no consistent statistically significant effect. Results for education in the full model generally show that migrants with less education are more likely to return, which would argue in favour of the skills bias argument proposed by Borjas (1989) and Borjas and Bratsberg (1996). However, the education effect was not significant for the wealthiest households. This may be because lower- and middle-wealth households may have found it difficult to act as co-insurers for the migrant, or they may have had more trouble investing in the migrant's education in the first place.

Co-residence variables show that the location of the migrant's spouse was related to return migration. Although it is relatively rare for the migrant's spouse to live in the origin village or household (see table 2), migrants were more likely to return if this was the case. In the overall sample, the odds of migrants returning to the same location where their spouse lived were over four times greater compared with never-married migrants. Results from the household wealth models show that this effect is strong and robust.

Another consistent effect was that migrants were less likely to return if they lived in the same migration destination as their spouse. For the full sample, the odds of return for migrants whose spouse lives in the same migration destination were nearly 36 per cent lower than the odds of return for never-married migrants. This effect was consistent across different levels of household wealth, except for the relatively poorest households, in which the effect was not significant. Migrants seem to follow migration strategies that eventually make it possible for them to stay with their spouse.

Household economic variables showed very few consistent effects. For the overall sample, owning agricultural equipment made it more likely that a migrant would return. However, this was only true for middle-wealth households. Migrants from middle-wealth households were about 43 per cent more likely to return if a household owned agricultural equipment. It may be that migrants from these households had migrated temporarily to earn money, which they used to maintain agricultural equipment for use in family farms or for renting to others.

Household demographic variables showed some consistent effects. In the overall sample, as the number of people living in the household increased, so did the likelihood of return. However, this effect was not significant for low-wealth households. It may be that migrants from middle- and high-wealth households were less likely to return to those households, since such households would be less reliant on them for labour, or perhaps the migrant wished to avoid excessive crowding.

The number of migrants from a household had a similar effect of lowering the likelihood of return migration, although the number of migrants was also not significant for households in the lowest wealth category. In other results (not shown), authors decomposed the number of household migrants into those who were living in the same destination as the ego migrant, and those who were living in a different migration location. This action is a test of migrant network theory (see Massey and Basem, 1992; Massey and others, 1993; Roberts and Morris, 2003), which argues that migrant networks at the destination provide a measure of security and access to resources which make it less likely for a migrant to return.

Results indicated that both these measures had a significant negative effect on return. While the effect of the number of household migrants at the same destination was consistent with migrant network theory, the finding that the number of migrants in other destinations also leads to a lower likelihood of return suggested that there is something more general about household out-migration that affects return migration. Also, the fact that this effect was dissimilar across households at different points on the overall wealth continuum may suggest the need for further research in this area.

Conclusion and policy implications

In this paper, the authors examined the effect on return migration of sending remittances, especially as it relates to household wealth. Overall, evidence supports the first hypothesis brought forward, which is that the sending of remittances by migrants is related to return migration. However, the effect of remittances on return migration exists only for small remittance amounts. This finding indicates that migrants are probably not following a household strategy motivated by co-insurance or investment. Rather, remittances they sent back home probably are only a gesture or signal to ensure their continued membership in the origin families or communities. Moreover, the seemingly simple relationship between remittances and return migration becomes more complex when households at different points on the wealth continuum are considered.

The best evidence for signalling, involving both the sending of remittances and the return of migrants, is for households in the middle-wealth category. Those households do not face the challenges of meeting their basic subsistence needs, which may characterize the situation of poorer households. Although they may feel pressure to improve their household's standing vis-à-vis wealthier households, the fact that only small amounts of money precede return is not consistent with this explanation. Thus, such migrants are probably only exploring better individual opportunities through migration. They perhaps intend to eventually return from their migration journey and they use remittances to keep the return option open by maintaining membership in the origin household.

Results for households at the tails of the wealth distribution are less clear-cut, and unfortunately cannot be deduced from the present research design. Migrants from poorer households sending remittances are not related to return. This finding may suggest that, because of their lack of resources, these households need someone living in an area with a different risk profile than their own who could act as an insurer. Another possibility is that migrants from such households may never have had any intention of returning to an economically disadvantaged household, and thus, they are more likely to remit altruistically. Indeed, VanWey (2004) suggested that an altruistic motive is more likely for migrants remitting to relatively poorer households.

With regard to migrants from wealthier households, there is likewise no evidence showing association between remittances and return migration. Perhaps members of such households have less need for remittances compared with individuals from relatively poorer households, or maybe they can make up for the loss of labour resulting from migration by hiring local labour.

In general, the present findings suggest that, while a household economics approach may be more practical in describing strategies pursued by rural-to-urban migrants in developing countries, theorists and policymakers need to pay more attention to the different types of motivations that migrants and households follow at various points on the wealth continuum. Future work needs to be done to determine what types of migration motivations are undertaken by poorer households. Also, policymakers should notice that only a small number of migrants return. Therefore, policy efforts should focus on helping migrants at their destination, especially if they are living in slum housing or working in hazardous occupations, which may require better access to medical care.

This research had a number of shortcomings which could influence results. There were limitations to using an origin survey. For instance, information about migrant characteristics might be flawed as it was coming from proxy reports from the household. Also, ascertaining the motives for sending or not sending remittances on

Appendix Table

Table 1. Multilevel binary logit estimates of return migration in 2000 for migrants aged 13 - 55 in 1994 by household wealth

Variable	Low-wealth households			Middle-wealth households			High-wealth households		
	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Intercept	0.248***	(0.502)	1.281	-1.125***	(0.303)	0.325	-1.049***	(0.594)	0.350
Remittance variables									
Migrant-to-household monetary remittance									
Migrant sent less than 1,000 Baht	0.468*	(0.217)	1.597	0.172	(0.155)	1.188	0.263	(0.285)	1.300
Migrant sent between 1,001 and 3,000 baht	0.379	(0.216)	1.460	0.434**	(0.149)	1.543	-0.358	(0.257)	0.699
Migrant sent between 3,001 and 5,000 baht	-0.008	(0.256)	0.992	0.388*	(0.164)	1.475	-0.177	(0.261)	0.838
Migrant sent 5,001 baht or more	0.222	(0.239)	1.248	0.054	(0.151)	1.055	0.002	(0.210)	1.002
(Migrant sent no money)									
Migrant-to-household in-kind remittance									
Migrant sent clothing	-0.043	(0.249)	0.957	0.444**	(0.153)	1.559	0.018	(0.254)	1.018
(Migrant did not send clothing)									
Migrant sent food (totaling 100 baht or more in value)	-0.415	(0.246)	0.661	-0.535***	(0.144)	0.585	-0.210	(0.236)	0.810
(Migrant did not send food)									

(continued)

Table 1. *(Continued)*

Variable	Low-wealth households			Middle-wealth households			High-wealth households		
	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Migrant sent household goods or electrical applicances	0.096	(0.215)	1.101	0.142	(0.140)	1.152	0.029	(0.209)	1.029
(Migrant did not send goods or applicances)									
Migrant sent vehicles	0.110	(0.779)	1.117	0.965*	(0.427)	2.625	-0.045	(0.554)	0.956
(Migrant did not send vehicles)									
Household-to-migrant remittance									
Household-to-migrant sent remittance	0.366	(0.197)	1.442	0.071	(0.126)	1.074	0.078	(0.178)	1.081
(Household did not send remittance)									
Demographic variables									
Age	-0.028	(0.015)	0.973	0.019*	(0.010)	1.020	0.017	(0.016)	1.017
Male	-0.399**	(0.134)	0.671	-0.317***	(0.090)	0.728	-0.431**	(0.142)	0.650
(Female)									
Details of migration									
Number of years gone	-0.221***	(0.031)	0.802	-0.179***	(0.020)	0.836	-0.14***	(0.031)	0.869
Human capital									
Education									
Less than primary school	0.723***	(0.188)	2.060	0.236	(0.129)	1.266	0.085	(0.231)	1.089
Greater than primary school	-0.682*	(0.303)	0.505	-0.541***	(0.156)	0.582	-0.229	(0.178)	0.795
(Primary school)									
Occupation									
Agricultural occupation	-0.293	(0.161)	0.746	-0.258*	(0.114)	0.773	-0.439*	(0.210)	0.644
(Non-agricultural occupation)									

(continued)

Table 1. *(Continued)*

	Low-wealth households			Middle-wealth households			High-wealth households		
Variable	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Co-residence									
Location of parents									
Both parents in origin household	-0.019	(0.239)	0.981	0.027	(0.159)	1.027	0.674*	(0.319)	1.963
Only mother in origin household	-0.494	(0.290)	0.610	0.184	(0.171)	1.202	0.897**	(0.335)	2.452
Only father in origin household	0.077	(0.388)	1.080	-0.177	(0.275)	0.838	-0.603	(0.628)	0.547
(Neither parent lives in the household)									
Marriage / spouse location									
Spouse lives in origin household or village	1.766***	(0.444)	5.848	1.704***	(0.294)	5.494	1.7***	(0.403)	5.473
Spouse is a migrant in same location	-0.318	(0.193)	0.728	-0.549***	(0.123)	0.577	-0.796***	(0.195)	0.451
Spouse is a migrant in different location	-0.904*	(0.410)	0.405	-0.208	(0.212)	0.813	-0.595	(0.428)	0.552
Migrant is divorced or widowed	-0.894	(0.519)	0.409	-0.600	(0.337)	0.549	-0.091	(0.421)	0.913
Spouse location unknown	0.085	(0.222)	1.089	-0.481**	(0.157)	0.618	-0.752**	(0.280)	0.471
(Migrant was never married)									
Location of children									
At least one of the migrant's children lives in household	0.824	(0.476)	2.279	0.461	(0.307)	1.585	0.512	(0.479)	1.668
(Migrant's children do not live in the household)									
Household economy									
Natural log of amount of land owned (in 1,000 sq.wa)	0.008	(0.022)	1.008	0.020	(0.013)	1.020	-0.011	(0.034)	0.989

(continued)

Table 1. *(Continued)*

Variable	Low-wealth households			Middle-wealth households			High-wealth households		
	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio	Coefficient	Std error	Odds ratio
Household grows rice	-0.122	(0.266)	0.885	0.128	(0.148)	1.137	0.140	(0.226)	1.150
(Household does not grow rice)									
Household owns equipment	0.001	(0.265)	1.001	0.345*	(0.143)	1.412	0.218	(0.212)	1.244
(Household does not own equipment)									
Household demographics									
Number of people living in the household	-0.079	(0.050)	0.924	-0.113***	(0.032)	0.893	-0.126*	(0.055)	0.881
Number of migrants	-0.060	(0.052)	0.942	-0.065*	(0.032)	0.937	-0.165**	(0.060)	0.848
N		1599			3419			1519	
- 2 LL		7 974.600			16 598.200			7 701.600	
BIC		7 994.400			16 620.200			7 721.100	
AIC		7 980.600			16 604.200			7 707.600	
Random effects	Var comp	Std err	ICC	Var comp	Std err	ICC	Var comp	Std err	ICC
Level-one random effects									
var(R_{ij}) = $p^2/3$	3.29	-	-	3.29	-	-	3.29	-	-
Level-two random effects									
var(U_{q}) = t^2	1.228	0.296	0.130	0.843	0.157	0.105	1.337	0.305	0.125
Level-three random effects									
var(V_{q}) = j^2	1.049	0.048	0.021	0.645	0.020	0.013	1.098	0.050	0.021

* $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed test)

Endnotes

[1] To assess the accuracy of this information the authors compared household reports at the origin to reports about migrants at the destination. A limited sample of migrants was used from a follow-up survey that targeted rural-to-urban migrants in four migrant destinations (greater metropolitan Bangkok, industrializing provinces of the Eastern Seaboard, Nakhon Ratchasima, and Buri Ram town) from 22 of the 51 origin villages (see Rindfuss and others, 2005 for details of the follow-up). The authors were able to match approximately 17 per cent of the overall sample to a migrant follow-up record in order to compare migrant characteristics (age, sex, education, occupation and remittances) between the two surveys. Some small differences were found in terms of characteristics, especially with regard to occupation. It is unclear whether those differences are due to an actual change in status, to a reporting error from the origin sample proxy report, or to the timing of the surveys -- the follow-up occurred several months after the household survey. Also, less than one fifth of the migrants in the sample could be matched, and the migrants in the follow-up were not a random subset of the overall sample. Therefore, the reliability of those comparisons appears questionable.

[2] The authors also limited the sample using list-wise deletion (i.e., complete case analysis) to deal with missing data. This procedure diminished the size of the sample by 7.5 per cent.

[3] There is noticeable heaping on the 10-year duration, which suggests that those estimates are subject to recall bias and may not be accurate.

[4] This enabled the authors to overcome a shortcoming faced in many studies that measure remittances and migration contemporaneously. Modeling the two as contemporaneous measures opens the possibility of endogeneity bias, that is, perhaps a set of unmeasured variables affects both variables, or the direction of causality is not from remittances to return migration, but vice versa.

[5] Because neither monetary nor in kind remittances sent from households to migrants had an effect on return migration, these were collapsed into a single variable in the final models.

[6] The currency of Thailand is the baht. In 1994, the exchange rate was approximately 25 baht per United States dollar.

[7] This may simply be related to the greater availability of money or goods of wealthier households.

[8] Household assets include the number of the following: black and white televisions, colour televisions, video cassette recorders, refrigerators, agricultural trucks, cars/trucks/pickups, motorcycles and sewing machines. In addition, dummy variables are included for whether a household: cooks with electricity or gas or does not do so; does or does not have windows with wood panes and shutters, glass panes, or insect screens; and has piped water. While the Nang Rong data do not contain information on individual income or household consumption expenditures, data were collected about household ownership of various consumer durables or assets. These variables can be used to create an index of assets that is a proxy for household wealth. In creating such an index, choosing an appropriate weight to attribute to each asset may be difficult. To calculate those weights, the authors applied principal components analysis (PCA), a well-known technique for reducing the dimensionality of a data set.

[9] The wealth index was constructed using the entire population of households, some of which did not get into the final analysis sample. Therefore, the percentage of households in each of the wealth distribution percentiles are not identical to the one which could have been expected given the operational definition.

[10] This includes the following provinces: Bangkok, Nonthaburi, Samut Prakan and Pathum Thani.

[11] Agricultural workers include primarily paddy rice farmers. Non-agricultural occupations include workers (mostly automobile or furniture repair employees, factory workers, construction workers and general/unskilled labourers), professionals (mainly clerical workers, police officers, soldiers, teachers, government employees and monks), service workers (made up mostly of domestic workers; "tuk-tuk" (motorized rickshaw), taxi, motorcycle or mini-bus drivers; salesmen; and small shopkeepers). Students and housewives were also considered as being involved in non-agricultural labour.

[12] Unfortunately, data limitations do not allow us to know whether migrants whose children do not live in the household are childless or whether their children live somewhere outside of the village.

[13] A wa is a Thai unit of measure of area: 1 square wa = about 4 square metres.

[14] As random effects are not of substantive interest in this paper, they are not discussed here in great details. Across all models variance components are quite low at the village level, with between 12-30 per cent of the variance occurring at the household level (depending on the model specification). Therefore, most of the variation occurs at the individual level.

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Determinants of Living Arrangements of Elderly in Orissa, India: An Analysis

In view of the changing socio-economic and demographic scenario of India, increasing levels of education and income along with a simultaneous decline in fertility, it is likely that a higher proportion of older persons in India will be living alone in the future. Therefore, policies and programmes related to older persons may have to be designed so that they adequately address the needs of older persons living alone.

By A.K. Panigrahi*

Demographic trends in many developing countries since the second half of the twentieth century are leading to an unprecedented increase in the absolute as well as relative size of older populations[1] (aged 60 years and older). Simultaneously, rapid social and economic changes have occurred that have potentially profound implications for the future of the elderly. At the global level the number of older persons is projected to increase from 603 million in 2000 to 2 billion in 2050. The increase will be especially dramatic in less developed regions where the size of older populations will more than quadruple, from 370 million in 2000 to 1.6 billion in 2050 (United Nations, 2009).

The magnitude of increase in the elderly population depends upon the pace of demographic transition. The world fertility rate has fallen from 5 children per women on average in 1950 to under 3 (2.67 children per women) in 2000, with a continued decline to 2 children per women (United Nations, 2009). Similarly, life expectancy recorded significant increases over the second half of the last

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century. This has led to a considerable shift in the age structure of the population, with shrinkage at the younger ages, and a bulge at the older ages.

India has one of the fastest-growing elderly populations in the world (Alam and Mukherjee, 2005; Gulati and Rajan, 1990; NSSO, 1998; Rajan, Mishra and Sarma, 2000; Sengupta and Agree, 2003). The population of India has increased from 361 million in 1951 to 1,027 million in 2001, while during the same period, the number of older persons has increased from 19 million (representing about 5 per cent of the total population) to 77 million (7.6 per cent of the total population).The number of older persons in India is projected to increase further to 159 million by the year 2025 and to 316 million by 2050 (United Nations, 2009).

Such a rapid increase in the size and proportion of the elderly population brings about several challenges for the country. Lack of ensured and sufficient income, absence of social security, loss of social status and recognition, lack of opportunities for using one's time creatively and persistence of ill health are some of the daunting problems faced by older persons in India. Another continuing major challenge is providing them with decent and comfortable living arrangements.

To date, living arrangements among older persons have not been an issue in most developing countries, including India, as their own families were expected to take care of them. However, issues concerning household structure and support for older persons in

Table 1. India's demographic scenario of ageing from 1950 to 2050

Years	Population (aged 60 and older) (in millions)	Percentages of total population	Growth rate (percentage)	
			Total population	Population aged 60 and older
1950	20	5.4	1.8	2.0
1975	35	5.6	2.3	2.9
2000	70	6.7	1.6	2.7
2025*	159	11.1	0.7	3.2
2050	316	19.6	0.3	2.2

Source: United Nations, 2009.
* Medium variant.

developing countries are becoming increasingly prominent as population ageing becomes a rising concern for many of these countries. Along with ageing, these countries are also experiencing socio-economic and demographic changes, more specifically increasing levels of education among women and their increasing involvement in paid employment. As economies grow, literacy levels rise and urbanization and modernization proceed rapidly, women bear fewer children and people live longer and healthier lives. The effects of these trends on families, households, kin networks and subsequent support of older persons are complex and not well documented. It is generally felt that the size and complexity of households decrease along with industrialization and urbanization. In traditional rural societies, families are more often extended than in modern urbanized settings where independent nuclear families predominate. In modern urban settings also, extended kinship ties tend to weaken and the nuclear family becomes more of an independent unit. These weakening ties lead to a reduction in social interactions and financial and physical support for the older generation, as well as to greater prevalence of separate living arrangements. In this context, issues related to older persons' living arrangements, which also have a bearing on their welfare, need proper attention. Against this backdrop of rapid demographic and family-related changes, it is important to explore the current nature of older persons' living arrangements in India.

Determinants of living arrangements: a review

Although many studies have been conducted on the type of living arrangements among older persons, the reasons for seeking a particular type of arrangement remains relatively unknown (Palloni, 2001; Kinsella and Phillips, 2005). Studies have identified a number of factors including age, sex, occupation, education, place of residence and number of children as important variables that shape such living arrangements (United Nations, 2005; Yadava, Yadava and Sarma, 1996; Jaiprakash, 1999). Velkoff (2001) found that living arrangements are influenced mainly by financial well-being, marital status, family size and structure as well as cultural traditions, but the relative importance of each of those factors has hardly been examined.

Living arrangements are generally studied as a dichotomous outcome whether living alone or co-residing with others. Earlier studies attempted to determine out the contributory factors leading to both of these arrangements. Data from Western countries show that over 60 per cent of the elderly[2] aged 65 and older live either alone or with their spouse (Palloni, 2001). However, data from developing countries show a much lesser magnitude of elderly people living alone. A general agreement among researchers is that there is an increasing trend towards elderly people living alone or with spouse even in India. The National Sample Survey Organization (NSSO) report of shows that the percentage of older persons living alone or with their spouse is 15 per cent in rural areas and 12.5 per cent in urban areas (NSSO, 1998)

A strong association is usually observed among the elderly between socio-economic factors and decisions to co-reside (Chakraborty, 2004; Yadava, Yadava and Sarma, 1996; Jaiprakash, 1999; Sahayam, 1988; Zimmer and others, 2003). For instance, co-residence is inversely related to the socio-economic background of the family. The decision of the elderly people to live alone is often shaped by the nature of economic resources available to them. It is generally argued that older persons with fewer resources tend to co-reside with their children, unlike those with better resources. In circumstances where older persons can benefit from some social security measures, such as old-age pension and health insurance, the probability of living alone would systematically rise compared with those not covered by such measures. However, empirical evidence does not support this argument fully (Pal, 2004; Bhattacharya, 2005). The contradictory argument is that in cases when older persons have some economic backing, their children, particularly those unemployed, would be more likely to stay with them to take advantage of the resources available. NSSO data report higher incidence of elderly people living alone or with a spouse in rural areas. Various small-scale surveys have also highlighted the difficult conditions endured by older persons living alone in the Indian context (NSSO, 1998; Rajan, Mishra and Sarma, 1999).

Older persons' education is yet another important variable determining their living arrangements. It has been found that, with increases in education level, the pattern of co-residence systematically diminishes (Andrade, Drumond and DeVos, 2002; Bongaarts and Zimmer, 2001; Pal, 2004; Zimmer, Hermalin and Lin, 2001).

Yet another important variable of interest is the number of surviving children the elderly have and its relationship with the co-residence pattern. From a broad range of studies, it is known that co-residence between older parents and at least one adult child is a central feature of familial support systems in most developing countries (Bongaarts and Zimmer, 2001). Studies generally support the view that the number of living children is positively related with the probability of living with them (Martin, 1989). With the drastic decline in fertility in many states of India, co-residing with children becomes increasingly difficult. In addition, educated adult children tend to migrate to urban areas in search of employment, leaving behind their elderly parents (Rajan, Mishra and Sarma, 1999; Bongaarts and Zimmer, 2001).

In the Indian context, not only does the number of children matter, but their sex and marital status also determines their co-residence pattern. In India, unlike in Western societies, sons are more likely than daughters to co-reside with their parents (Bongaarts and Zimmer, 2001; Chaudhury, 2004; Gulati and Rajan, 1990; De Silva, 1994; Zachariah, 2001). Studies in India have also found significant gender differentials among older persons' living arrangements, but these gender differentials are attributed to the higher incidence of widowhood due to the higher expectation of life among women (Chakraborti, 2004; Knodel, 1999; Knodel and Ofstedal, 2003; NSSO, 1998; Rajan, Mishra and Sarma, 2000).

The joint family system which persisted in the country for a long period of time has given way to the "nuclearization" of families. As a result, the earlier concept of older persons being provided with support by their children has also undergone drastic changes. This may also be due to other factors such as modernization, urbanization and the erosion of traditional cultural values (Bhattacharya, 2005; Mason, 1992; Rajan, Mishra and Sarma, 2000; Sahayam, 1988; Shah, 1999; Sumangala, 2003).

Although it is important to find out the significance of each of these factors in determining co-residence of elderly, there are certain inherent limitations for such an analysis. The relationship of each of these variables with living arrangements depends mainly upon the cultural context in which the studies are undertaken. For instance, while availability of resources with the elderly may enhance the chances of living alone in the West, the reverse may be true in the Indian context as children would be more willing to live with their the parents in such cases (Pal, 2004). Therefore, studies on determinants of living arrangement should also be carried out within a specific cultural context.

What explains the living arrangements of the elderly?

India is still characterized by its traditional ways of living where several generations live jointly within the same household. With improved health infrastructure and increased life expectancy, older persons are expected to live longer. However, joint family systems are on the decline and more and more families are becoming nuclear. In addition, older persons in India are facing several other challenges affecting their lives, such as lack of ensured and sufficient income to support themselves, absence of social security, loss of social status and recognition, lack of opportunities to make use of their time creatively and persistence of ill health. Studies show that a higher proportion of older persons are facing a difficult life without much hope for improvement. Providing decent and comfortable living arrangements continues to be a major challenge. Against this background, it is important to explore the current nature of living arrangements and their determinants. Studies focusing on the socio-economic and demographic correlates of living arrangements are limited however. Hence, this paper analyses the socio-economic and demographic correlates of the living arrangements of older persons in the state of Orissa.

Objectives of the paper

The major objectives of this paper are to (a) examine the determinants of living arrangements of elderly in Orissa; (b) examine the socio-economic, demographic and gender differentials in living arrangements among older persons in Orissa; and (c) study the regional variations in the living arrangements among the elderly in that state.

Study area

The study was undertaken in the state of Orissa, in eastern India. This is one of the country's poorest states. At the same time, Orissa has a higher proportion of elderly persons in the population compared with the national average. Studies have shown that disabilities among the elderly are also higher in Orissa (Srivastava and Mishra, 2005). A higher level of poverty, combined with a larger share of the old-age population, poses a serious challenge in terms of providing decent living arrangements for older persons in the state.

Data and methodology

Data for the present paper are based on the 60th round of the National Sample Survey on the elderly for the state of Orissa. This survey was conducted by the NSSO and primarily focused on health care, education and on the problems faced by older persons (aged 60 years and older). This survey provides information on older members of the households, including the number of surviving sons, daughters and dependents, their economic status and usual activities, living arrangements, levels of mobility, disabilities, self-reported health status, chronic health conditions, ownership and management of assets, management of social and religious matters, daily chores and availability of food, clothing and medicine. The total sample size was 1,238 older persons (660 males and 578 females). Data were collected through interviews conducted in the sample households.

Sampling design

The sample design adopted for the survey was essentially a two-stage stratified design, with census villages and urban blocks as the first-stage units (FSUs) for the rural and urban areas, respectively, and households as the second-stage units (SSUs). The survey period was from January to June 2004, split up into two subrounds of three months each. The rural and urban samples of FSUs were drawn independently in the form of two subsamples and equal numbers of FSUs of each subsample were allocated for the two subrounds.

In the first stage sampling unit 211 villages and 56 urban blocks were surveyed throughout the state of Orissa. Researchers decided to select 10 households as the second stage units to be surveyed in each selected FSU; Thus, 2,094 rural households and 560 urban households were surveyed. However, after cleaning the data, responses from only 1,238 respondents (aged 60 years and older) were used, including 984 from rural areas and the remaining 254 from urban areas.

Bivariate and multivariate statistical tools were used to establish the determinants of living arrangements of older persons in Orissa. During the first part of the data analysis, bivariate cross tabulation with chi-square test statistics was conducted to determine the relevant significant differences in living arrangements of the elderly with their background characteristics. In order to establish a strong association, an attempt has been made to use logistic regression analysis by controlling some of the important variables, such as age, sex, number of surviving sons and economic independence.

Analysis and discussion

The determinants that influence the likelihood of older persons living alone are the main focus of this paper. Older persons are considered to be "living alone" if they live alone or with their spouse but with no other kin. By contrast "co-residence" or "not living alone" occurs when the older person lives with any one of their kin, including children. NSSO questions on living arrangements gathered information on whether the older individual lives alone, whether he/she lives with spouse only, whether he/she lives with spouse and children, with children only, or with other relatives and non-relatives. Socio-economic and demographic factors have been studied to determine the significant covariates of the living arrangement choices.

Table 2 shows the different living arrangement patterns of older persons in Orissa. It is evident from this table that 15.6 per cent of older persons live alone, while the rest (84.4 per cent) are in co-residence. It is interesting to note that the proportion of elderly who live alone is slightly higher than the Indian average of 14.5 per cent (Chaudhuri and Roy, 2007). However, studies have shown that the proportion of elderly who live alone in most European countries is much higher (Grundy, 2000) compared with that for India. Studies from South-East Asian countries too have shown that a much higher proportion of elderly live alone (Martin, 1989).

The majority of older persons (51.5 per cent), who are in co-residence, live with their spouses and children; roughly, one third live without a spouse but with children, while a small proportion (2.5 per cent) live with other relatives and non-relatives. These findings are almost in line with the expected behaviour of the Indian elderly -- that most elderly live with their children because of strong traditional value systems. However, the proportion of older persons living alone is likely to increase in the near future owing to a variety of socio-economic and demographic changes that have been taking place in Indian society. A number of researchers have pointed out that the Indian traditional joint family is disintegrating due to the forces of urbanization and modernization (Conklin, 1988; Dhurvarajan, 1988; Sharma and Dak, 1987). A study by Jamuna (2003) concluded that India is currently experiencing massive socio-economic change in the face of rapid industrialization, urbanization and globalization. Migration out of rural villages to cities for employment and increased rates of women entering into the workforce is threatening traditional familial support for the elderly, which brings about intergenerational conflicts. Even among adult children willing to provide necessary care, many are required to move to the industrial centres for employment, leaving older persons alone in their village. A study by Kaplan and Chadha (2004) found that the traditional Indian extended and joint family system has undergone significant changes owing to factors such as mobility from rural-to-urban centres. The authors strongly emphasized that mobility from rural to urban areas has certain economic benefits, but also some drawbacks, such as contributing to the nuclearization of families and the leaving behind of elderly parents, especially in rural settings. Such mobility affects the lives of older persons in various ways, especially since those persons are frail and in need of emotional and social support. Similarly, a study by Madhurima

Table 2. Distribution of living arrangements of the elderly by demographic variables in Orissa

Demographic variables	Living arrangements of elderly (percentage)				Total		
	Living alone	Living with spouse and other members	Living without spouse but with children	Living with others	Total	Observations (N)	Percentage
Age*							
60-69 years	17.3	54.0	26.7	2.0	100	860	69.5
70-79	11.9	43.9	40.5	3.6	100	300	24.2
80 and older	7.3	46.8	40.7	5.2	100	78	6.3
Sex*							
Male	18.6	68.3	12.2	1.0	100	660	53.3
Female	11.9	32.0	51.6	4.5	100	578	46.7
Marital status*							
Never married	12.9	NA	65.1[a]	22.0	100	7	0.6
Currently married	18.9	76.9	3.7	0.5	100	820	66.2
Widowed	8.7	NA	82.0	9.3	100	407	32.9
Divorced/separated	24.8	NA	75.2	0.0	100	4	0.3
Surviving children*							
None	50.5	16.6	NA	32.9	100	49	4.0
One	12.4	35.3	46.8	5.5	100	129	10.4
Two	25.2	42.6	29.2	3.1	100	173	14.0
Three or more	11.9	57.6	29.7	0.8	100	887	71.6

(continued)

Table 2. *(Continued)*

Demographic variables	Living arrangements of elderly (percentage)				Total		
	Living alone	Living with spouse and other members	Living without spouse but with children	Living with others	Total	Observations (N)	Percentage
Surviving sons*							
None	42.9	27.4	16.2	13.5	100	149	12.0
One	12.4	48.4	36.8	2.4	100	366	29.6
Two	12.2	61.0	26.4	0.5	100	368	29.7
Three or more	11.1	54.0	34.4	0.5	100	355	28.7
Surviving daughters*							
None	18.8	33.3	41.8	6.1	100	230	18.6
One	15.1	54.0	27.8	3.1	100	348	28.1
Two	13.6	56.4	29.0	0.9	100	339	27.4
Three or more	15.1	56.6	27.1	1.1	100	321	25.9
Observations (N)	193	638	376	31		1 238	100
Percentage	15.6	51.5	30.4	2.5	100		

Source: Author's calculation

* $p < 0.001$ (Pearson's chi-squared test statistics)

[a] This is because those elderly have never been married or that they have adopted children. Hence, in the present analysis 65.1 per cent of the elderly who have never been married are living without spouse, yet with children.

(2008) found that urban lifestyle and formal education have brought about a decline in the familial network of relationships, which is affecting the status and care of the elderly in India. The remainder of this article analyses the important factors that determine the living arrangements of older persons in Orissa.

Demographic determinants of living arrangements of the elderly in Orissa

The major demographic factors that determine the living arrangements of older persons considered in this study are, age, sex, marital status and surviving children.

Age and living arrangements

Studies have shown that the age of the elderly is one of the most important determinants of living arrangements. For the present analysis, the age of the elderly is categorized as *younger old, older old* and *oldest old*, for those in the age groups 60-69, 70-79 and 80 and older, respectively. The corresponding percentages of younger old, older old and oldest old in the sample were 69.5 per cent, 24.1 per cent and 6.3 per cent, respectively.

Table 2 presents the association between the age of the elderly and their living arrangements. It is quite evident from this table that as their age increases, the proportion of older persons living alone decreases. The proportion of elderly people living alone is highest in the age group 60-69 (17.3 per cent). This proportion decreases to 11.9 per cent when the elderly move to the age group 70-79 and is reduced further to 7.3 per cent when the elderly attain ages 80 and older, indicating lower chances of the elderly living alone when they grow old. This may be the due to their declining capacity for self-care. Studies conducted elsewhere report similar findings (Shah and others, 2002; Liang, Gu and Krause, 1992; Ramashala, 2001; Zimmer and Kim, 2002). Further, irrespective of the age, living with spouse and children is the most common living arrangement observed in the state of Orissa. It is also interesting to note that a positive relationship exists between the age of the elderly and living without spouse, but with children. As the age of the elderly increases, the proportion of elderly living without spouse but with children also increases. This could be due to the fact that as age increases, there is a higher chance of widowhood among older persons and consequently they tend to live with children, but without their spouse. Similarly, the proportion of elderly living with others also goes up with increasing age. As in many other countries, age turns out to be an important determinant of living arrangements in Orissa. The higher the age of the elderly, the lower are their chances of living alone. Pearson's chi-square test statistic also confirms that age and living arrangement relationships are statistically significant.

The age and living arrangement relationship may however be quite complex as there is a negative relationship between the age and living alone. Age alone may not affect patterns, but it could well be due to reasons of an economic nature as well. It may be argued that the economic condition of the elderly deteriorates with age even for those getting a pension, as pensions usually do not increase in line with the cost of living and therefore the real pension reduces over time. As the elderly grow older, they may depend economically on others and therefore tend to co-reside. Hence, the observed relationship between age and living arrangements may be as much due to economic reasons, as to age per se. Therefore, further in-depth analysis is required to deduce the exact relationship between age and living arrangements by considering a number of economic variables.

Sex and living arrangements

Sex of the elderly is another important demographic indicator that determines their living arrangements. Table 2 presents the relationship between the sex of the elderly and their living arrangements. The table shows that, in Orissa the proportion of elderly males who live alone (18.6 per cent) is higher than that of elderly females living alone (11.9 per cent). This is in contrast with the pattern observed elsewhere in the world wherein more elderly females live alone than elderly males. Nevertheless, in the Indian context females are not expected to live alone and therefore this proportion is lower.

Among those who are in co-residence, the majority of the males (68.3 per cent) live with spouse and children, but majority of females (51.6 per cent) live without their spouse but with children. Studies conducted elsewhere have also shown that more males than females live with their spouses (Bian and others, 1998; Chan, 1997; Bongaarts and Zimmer, 2001; Knodel and Ofstedal, 2003; Panda, 1997; Shah and others, 2002; Zimmer, 2005). As mentioned previously, this may be due to the higher incidence of widowhood among elderly females than among elderly males (Chan, 1997; Sobieszczyk, Knodel and Chayovan, 2003; Lee and Palloni, 1992; NSSO, 1998 and 2006, United Nations, 2005; Shah and others, 2002). Here again, it may be difficult to establish the relationship between sex and living arrangements unless marital status is controlled. The next attempt therefore is to look at the differentials in living arrangements according to marital status.

Marital status and living arrangements

Unlike in other countries, the association between marital status and living arrangements is not very prominent, mainly because marriage is almost universal in India. However, an attempt has been made to look into the relationship between marital status and living arrangements. The marital status of the elderly has been divided into four categories: never married, currently married, widowed and divorced/separated. In this sample, the majority of the elderly are either currently married (66.2 per cent) or widowed (32.9 per cent), while a small proportion is divorced/separated (0.3 per cent). The proportion never married (0.6 per cent) is negligible in this sample.

Table 2 also presents the association between marital status and living arrangements of elderly persons in Orissa. Since the numbers of persons who are never married and divorced/separated are very small, comparisons were given only for those who are currently married versus those widowed. It can be seen from the table that a relatively higher proportion of currently married older persons live alone[3] (18.9 per cent) when compared with those who are widowed (8.7 per cent). However, the majority of the widowed (82.0 per cent) live with their children. It is likely that when both spouses are alive, they live together; when one of the partners dies, the other one may move with children or other relatives. In the Indian context, traditionally widowed elderly were generally looked after by their children. The chi-squared test also confirms the existence of a significant difference in living arrangements of elderly according to their marital status.

Surviving children and living arrangements

Another important demographic factor which determines the living arrangements of older persons is the presence of surviving children. In traditional societies, including India, it is generally believed that children furnish old-age security. In this sample, the percentages of elderly persons with no child, one child, two children and three or more children are 4.0 per cent, 10.4 per cent, 14.0 per cent, and 71.6 per cent, respectively.

Table 2 presents the association between the number of surviving children and the living arrangements of the elderly in Orissa. The majority of older persons without any surviving children either live alone (50.5 per cent) or with others (32.9 per cent). As expected, the number of children is negatively associated with living alone. For example, only 12.4 per cent of the elderly live alone when they have one surviving child, whereas 50.5 per cent of the elderly live alone when they do not have any children. Studies conducted elsewhere also generally support the view that the number of children is positively related with the probability of living with them (Bian and others, 1998; Burch and Mathews, 1987; Martin, 1989; Rajan and Kumar, 2003; Zimmer and Kwong, 2003). The greater the number of surviving children, the higher are the the chances of the elderly co-residing with them. The chi-squared test also confirms the existence of a significant difference in living arrangements of elderly according to the number of their surviving children.

Surviving sons and living arrangements

Not only is the number of surviving children important, but their sex composition also determines the living arrangements of the elderly. In India, a son is considered the most important care provider for parents in their old age. In this sample, it was found that 12.0 per cent of the elderly did not have a surviving son, 29.6 per cent had only one surviving son, 29.7 per cent had two surviving sons and 28.7 per cent had three or more surviving sons, respectively.

Table 2 presents the distribution of the elderly with the number of surviving sons by living arrangements. It is evident from the bivariate analysis that the number of surviving sons is negatively associated with the elderly living alone. For example, 42.9 per cent of the elderly with no surviving son were living alone compared with 12.4 per cent of the elderly with one surviving son. The proportion of elderly living alone further declines with increases in the number of surviving sons. Similarly, the proportion of elderly living with other members also declines with increases in the number of surviving sons. The result of Pearson's chi-squared test is also significant with respect to number of surviving sons.

Surviving daughters and living arrangements

Apart from the numbers of surviving sons that determine the living arrangements of elderly persons, the number of surviving daughters is equally important. In this sample, 18.6 per cent of the elderly did not have any surviving daughter, 28.1 per cent had one surviving daughter, 27.4 per cent had two, and 25.9 per cent had three or more surviving daughters. It is interesting to note that only 18.8 per cent of the elderly without any daughter lived alone whereas 42.9 per cent of the elderly with no sons lived alone, indicating the importance of surviving sons in determining the living arrangements of elderly. Further, the proportion of elderly persons living alone does not vary much with respect to the number of surviving daughters, indicating the importance of sons in determining the living arrangements.

From the above discussion, it is clear that demographic variables, such as age, sex and number of surviving sons, affect the living arrangement choice among the elderly. In Orissa, older persons that are in the younger age group, those that are males and without any surviving sons are more likely to live alone as compared with their counterparts.

Regional variations in living arrangements

The existence of wide interregional variations within states of India is a well-recognised fact. These regional disparities exist with respect to physical and social infrastructure and also with regard to various other development indicators. Many demographic indicators, such as fertility, mortality and age at marriage, differ across regions, and it is possible to assume that living arrangements of older persons may vary accordingly. It is generally presumed that the pattern of living alone is likely to be more common in a better developed region than in a lesser developed one, although mixed results have been observed based on data collected in developing countries. An attempt has therefore been made here to analyse the regional variation and living arrangements across regions of Orissa.

Geographically, Orissa is divided into three subregions: northern, southern and coastal. When various socio-economic indicators are considered, the coastal subregion is the better developed one followed by the northern subregion. By contrast, the southern subregion, in which the population is mostly tribal, is the least developed one. An attempt has also been made to see whether the living arrangement pattern differs among these three subregions of Orissa. Table 3 presents these results, clearly showing that the proportion of elderly living alone is much higher in the southern region (21.5 per cent) compared with the northern (15.8 per cent) and coastal (13.7 per cent) region. Here again one can see that in all the three subregions, as in the case of Orissa, a higher proportion of "younger olds" persons live alone compared with those elderly who are aged 80 and older. However, for each age group, the southern subregion has a higher proportion of elderly living alone as compared with Orissa's northern and coastal subregions. Similarly, in all these three subregions, the proportion of the elderly living alone is higher among males and elderly with no surviving children. Further, in every category, the proportion of elderly living alone is higher in the southern subregion than in northern and coastal ones. Hence, irrespective of the demographic characteristics, the proportion of elderly living alone is much higher in the southern part of Orissa than in the northern and coastal parts.

Table 3. Distribution of demographic indicators and living arrangements of elderly across geographical subregions within Orissa

	Coastal		Southern		Northern		Total	
Demographic variables	Living alone (per cent)	N	Living alone (per cent)	N	Living alone (per cent)	N	Living alone (per cent)	N
Age								
60-69	16.1	419	20.9	144	17.5	297	17.3*	860
70-79	10.6	173	20.1	26	12.1	101	11.9	300
80 and older	0.3	42	38.4	7	9.6	29	7.3	78
Sex								
Male	16.5	337	24.0	89	19.7	234	18.6*	660
Female	10.4	297	19.2	88	11.1	193	11.9	578
Marital status*								
Currently married	16.1	431	26.7	117	20.5	272	18.9	820
Widowed	8.1	198	11.9	58	8.0	151	8.7	407
No. of surviving children*								
None	49.1	15	62.3	19	38.2	15	50.5	49
One	27.2	49	7.1	34	3.3	46	12.4	129
Two	20.9	85	29.2	30	30.0	58	25.2	173
Three or more	9.8	485	15.9	94	14.1	308	11.9	887
No. of surviving son*								
None	50.5	56	48.5	34	34.9	59	42.9	149
One	11.3	174	14.2	62	13.2	130	12.4	366
Two	10.0	201	11.5	45	15.8	122	12.2	368
Three or more	10.7	203	23.3	36	7.6	116	11.1	355
Surviving daughters								
None	16.8	86	25.3	59	16.2	85	18.8*	230
One	17.9	185	24.9	48	6.6	115	15.1	348
Two	11.3	188	18.1	44	15.9	107	13.6	339
Three or more	9.8	175	11.9	26	23.6	120	15.1	321
Total	13.7	634	21.5	177	15.8	477	15.6	1238

Source: Author's calculation
N= number of observations
$p^* < 0.001$

Socio-economic determinants of living arrangements of the elderly

Socio-economic and cultural factors are expected to have the strongest impact on the living arrangements of older persons. The major socio-economic variables considered for the analysis are place of residence, education, occupation, caste and older persons' income. Since information related to the latest variable is not directly available from the national sample survey data, other variables, such as monthly expenditure pattern, land ownership, state of economic independence and number of dependants, are taken as proxy variables that determine the economic status of the elderly.

Place of residence and living arrangements

Table 4 presents the living arrangements of older persons according to their place of residence. In the sample, 80 per cent of the elderly are from rural areas while 20 per cent are from urban areas. The data show that although co-residence is the most common living arrangement both in rural and urban areas, a slightly higher proportion (15.6 per cent) of older persons from rural areas live alone as compared with their urban counterparts (14.5 per cent). Similar findings are observed in studies conducted in India and elsewhere (Knodel and Chayovan, 1997; NSSO, 2006; Panda, 1997; Zimmer and Kim, 2002). As expected, among older persons who are in co-residence, the most common arrangement irrespective of their residence is living with spouse and children. Further, a small proportion of older persons live with other relatives or non-relatives. Here, the Pearson's chi-square test statistics are not significant, suggesting that there is no significant difference in living arrangements of elderly in Orissa according to their place of residence.

Education and living arrangements

The education of the elderly also plays an important role in determining living arrangements. It was found that, with increased educational level, the pattern of co-residence systematically diminishes (Andrade, Drumond and De Vos, 2002; Bongaarts and Zimmer, 2001; Pal, 2004; Martin, 1989; Shah and others, 2002). Generally, older persons with less education are more likely to live in traditional extended family households than those with a higher level of education. However, contradictory findings have also been observed across various countries. Studies show that the average proportion living with children is higher among those with some education in Africa, Latin America and the Caribbean, and among those in Asia with no education.

From table 4, it can be seen that the highest proportion of elderly persons living alone (32.3 per cent) is found among those with the highest (more than higher secondary) level of education than among older persons who are illiterate (15.5 per cent) or literate up to secondary education only (14.3 per cent). Hence it is evident that a certain level of minimum education rather than a few years of schooling is necessary for older persons to make decisions about living alone. Pearson's chi-squared test statistics are significant here too, meaning that there is a significant difference in the living arrangements of older persons according to their level of education.

Caste and living arrangements of elderly persons

It may be of some interest to see whether caste plays any important role in determining living arrangements, as many authors have pointed out that living arrangements of older persons are more culturally determined than determined by economic factors. Since most of the cultural variables have not been made available by the survey data, detailed analysis of the impact of cultural variables on living arrangements cannot be carried out at this stage. Nevertheless, an attempt has been made here to see whether caste plays any role in determining the living arrangements of older persons in Orissa. Table 4 presents the caste and living arrangements of older persons in Orissa. As can be seen from the table, although major differentials in living alone do not exist in different caste groups, a slightly higher proportion of other caste groups live alone as compared with scheduled castes, schedule tribes and other less developed castes. However, these findings are not sufficient to draw any major conclusions. The chi-square test statistics are found to be insignificant with the association of caste and living arrangements of elderly persons in Orissa. From this analysis, it is evident that there is no difference in caste by the living arrangements of elderly persons in Orissa.

Income and living arrangements

Income of older persons is one of the important determinants of their economic status. Studies in developed countries have concluded that, for a variety of reasons, the majority of older persons with higher income prefer to live alone than those with lesser income. However, results from developing countries give a mixed picture. As already pointed out, direct income of the elderly has not been collected through the NSSO survey; therefore per capita monthly expenditure, ownership of land and information on economic independence are used as the best proxies for the economic status of older persons.

Table 4 shows the pattern of living arrangements of the elderly by monthly per capita expenditure. It is generally presumed that the higher the per capita expenditure, the higher will be their income. Unlike findings from developed countries, there is no clear-cut evidence to support the notion that higher expenditure (presumably by people with higher incomes) leads to a higher proportion of older persons living alone. Pearson's chi-square test statistics are not significant here; in other words, the living arrangements of the elderly do not differ according to their income.

Possession of land and living arrangements

Although the per capita monthly expenditure pattern did not seem to have any effect on living alone, what is attempted next is to look into the association between land ownership and living arrangements. Possession of land is another important variable that determines the economic position of the elderly. Table 4 shows that the ownership of land does not appear to influence living arrangements as the proportion of older persons living alone does not show any clear pattern with an increase in land ownership, while the majority of older persons live in co-residence irrespective of the possession of land. It was found that the association between the land possessed and living arrangements is not significant. In other words, there is no significant difference in the living arrangements according to possession of land.

Therefore, it is clear that the economic variables, such as monthly per capita expenditure pattern and ownership of land, do not influence the living arrangements of older persons in Orissa. This may be due to the fact that in Orissa cultural variables may be playing a more important role in shaping living arrangement choices than economic variables. Yet another reason could be that those variables do not really measure the economic status of the elderly individual but rather the economic status of the household. Probably, the economic status of the individual may be more important in shaping the living arrangement rather than the economic status of the household. In order to know the economic status of the elderly per se, the variable state of economic dependence has been considered below.

Level of economic dependence and living arrangements

The state of economic dependence is categorized as elderly who are not dependent on others, those that are partially dependent and those that are fully dependent. The main aim of linking the state of

Table 4. Distribution of socio-economic determinants of living arrangements of the elderly in Orissa

Socio-economic variables	Living arrangements of elderly (percentage)				Total		
	Living alone	Living with spouse and other members	Living without spouse but with children	Living with others	Total	Observations (N)	Percentage
Place of residence Rural	15.6	50.8	31.1	2.6	100	984	79.5
Urban	14.5	55.7	27.3	2.5	100	254	20.5
Social caste							
ST (Scheduled Tribe)	13.3	42.7	38.8	5.2	100	217	17.5
SC (Scheduled Caste)	15.3	57.5	25.1	2.1	100	232	18.7
OBC (Other Backward Caste)	15.0	53.5	29.8	1.7	100	483	39.0
Upper caste	18.6	48.9	29.9	2.6	100	306	24.7
Level of education*							
Not literate	15.5	40.6	40.3	3.6	100	808	65.3
Literate up to secondary	14.3	75.4	9.8	0.5	100	396	32.0
Higher than secondary	32.3	65.9	1.8		100	34	2.7
Monthly per person expenditure(Rs.)							
Less than Rs. 250	13.4	49.7	33.5	3.4	100	250	20.2
Between Rs. 251 and 500	17.6	52.4	27.4	2.6	100	645	52.1
Between Rs. 501 and 1000	11.8	46.4	40.1	1.7	100	267	21.6
More than Rs. 1,001	14.8	65.7	17.3	2.1	100	76	6.1

(continued)

Table 4. *(Continued)*

Socio-economic variables	Living arrangements of elderly (percentage)				Total		
	Living alone	Living with spouse and other members	Living without spouse but with children	Living with others	Total	Obser-vations (N)	Percentage
State of economic dependence*							
Not dependent on others	28.0	60.6	9.8	1.6	100	338	27.3
Partially dependent on others	12.6	68.0	17.9	1.5	100	209	16.8
Fully dependent on others	10.0	41.6	45.0	3.5	100	691	55.8
No. of dependants*							
None	58.0	41.0	1.0		100	17	5.0
One	43.2	48.8	7.5	0.5	100	100	29.6
Two	32.9	52.8	9.6	4.7	100	104	30.8
Three or more	2.7	83.1	14.0	.2	100	117	34.6
Land ownership (hectares)							
Less than 0.2	15.4	50.9	31.7	2.0	100	610	49.4
Between 0.2 and 1	16.6	49.1	31.0	3.2	100	411	33.3
Between 1.01 and 3.0	12.4	58.0	26.8	2.8	100	184	4.9
More than 3.01	11.6	49.4	33.3	5.7	100	30	2.4
Observations (N)	193	638	376	31		1238	100
Percentage	15.5	51.2	30.7	2.6	100		

Source: Author's calculation.
*P < 0.001
A $1.00 = about 45 rupees

economic dependence with living arrangements is to know how economic dependence shapes the living arrangements of older persons in Orissa. Table 4 presents the data on living arrangements according to the state of economic independence. The data show that only around 28 per cent of the elderly are economically independent in Orissa. The majority of the elderly are either fully (55 per cent) or partially dependent (17 per cent) on others. This table clearly shows that the decision on living alone is often shaped by the person's level of economic independence. Nearly 28 per cent of the economically independent elderly live alone: this proportion is much less for the elderly who are fully dependent on others (10 per cent) or partially dependent (12.6 per cent). The effect of economic independence on living alone is strong even after controlling for their age. Even among the "older olds" (in this case, those aged 70 and older), 31.1 per cent live alone when they are fully independent compared with those who are fully or partially dependent on others (table 5). This finding confirms the fact that the income of the elderly per se is more important than the income of the household in determining living arrangements. Pearson's chi-squared test statistics are significant, which implies that there is a clear difference in living arrangements with reference to the state of economic independence.

The co-residence of elderly with their children is often seen as a unidirectional relationship where the older persons need support and they benefit from co-residence. However, studies have shown

Table 5. Age, state of economic dependence and living arrangements of elderly in Orissa

State of economic dependence	60-69 years (percentage)			70 years and older (percentage)		
	Living in co-residence	Living alone	Total (N)	Living in co-residence	Living alone	Total (N)
Not dependent on others	72.6	27.4	100 (284)	69.0	31.0	100 (56)
Partially dependent on others	87.4	12.6	100 (160)	87.0	13.0	100 (48)
Fully dependent on others	88.1	11.9	100 (416)	93.0	7.0	100 (274)
Total	82.7	17.3	100 (860)	89.1	10.9	100 (378)

Source: Author's calculation.

that the economically active elderly make substantial contributions to support the household (Chan, 1997; Hermalin, 1997). Studies have also shown that the presence of dependents who depend on the elderly also promotes co-residence. In this context, it is interesting to see the level of economic support older persons furnish to households. A question was directed in the survey to those non-dependent elderly in order to determine the number of dependents among older persons.

It is interesting to note that nearly 95 per cent of the economically independent elderly have dependents. Roughly, 30 per cent of older persons have one or two dependents and nearly 35 per cent have three or more. Pearson's chi-square test statistics are significant, meaning that there is a strong difference in living arrangements of the elderly according to the number of dependents. This establishes the fact that in co-residence, older persons may not always be the recipient of care and support; they also support others in multiple ways.

The regional variations (table 6) in living arrangements with respect to the socio-economic variables have shown that the overall pattern of living alone remains nearly the same across socio-economic categories, except in the case of place of residence. In the earlier analysis, it was found that a slightly higher proportion of rural elderly live alone as compared with their urban counterparts. However, the regional analysis has shown that, in coastal and southern subregions, a much higher proportion of urban elderly live alone than those in the rural areas.

From the preceding section, it is clear that, irrespective of the region or place of residence, education and state of economic independence play an important role in determining the living arrangements among older persons. The regional variation in living alone was also observed, with a higher proportion of older persons living alone in the southern subregion than in the coastal and northern subregions. However, the observed relationship between demographic and socio-economic factors and living arrangements of older persons, could be mediated by several other factors. Therefore, a multivariate analysis is necessary to determine the determinants of living arrangements.

Analysis of logistic regression

The analysis and discussions in the previous sections clearly underscored the differentials in living arrangements according to older persons' socio-economic and demographic characteristics. However,

Table 6. Distribution of socio-economic indicators and living arrangements of the elderly across geographical subregions within Orissa

	Coastal		Southern		Northern		Total	
Socio-economic variables	**Living alone (per cent)**	**N**	**Living alone (per cent)**	**N**	**Living alone (per cent)**	**N**	**Living alone (per cent)**	**N**
Place of residence								
Rural	12.7	495**	20.8	148	17.5	341*	15.6	984
Urban	21.8	139	33.7	29	0.4	86	14.5	254
Social caste								
ST (Scheduled Tribe)	9.0	20	18.6	73	10.8	124	13.3	217
SC (Scheduled Caste)	15.1	146	30.4	20	11.4	66	15.3	232
OBC (Other Backward Caste)	10.8	257	18.4	55	20.2	171	15.0	483
Upper Caste	17.1	211	31.4	29	17.9	66	18.6	306
Level of education								
Not literate	12.1	398*	23.6	141**	16.5	270	15.5*	808
Literate up to secondary	14.3	215	9.6	34	15.1	147	14.3	396
Higher than secondary	51.7	21	0.0	2	0.0	10	32.3	34
Per capita expenditure (Rs.)								
Less than Rs.250	7.8	70	16.2	83	15.2	97	13.4	250
Between Rs. 251 and 500	14.6	351	29.0	75	19.1	218	17.6	645
Between Rs. 501 and 1000	13.2	169	15.0	14	8.8	84	11.8	267
Greater than Rs. 1 001	19.2	44	20.3	5	7.3	28	14.8	76
Possession of land (hectares)								
Less than 0.2	14.1	338**	29.6	80*	12.9	192	15.4	610
Between 0.2 and 1	14.0	214	24.4	58	17.8	139	16.6	411
Between 1.01 and 3.0	13.0	72	7.3	35	17.7	78	12.4	184
More than 3.01	0.0	10	0.0	4	21.0	18	11.6	30

(continued)

Table 6. *(Continued)*

Socio-economic variables	Coastal Living alone (per cent)	Coastal N	Southern Living alone (per cent)	Southern N	Northern Living alone (per cent)	Northern N	Total Living alone (per cent)	Total N
State of economic dependence*								
Not dependent on others	25.2	168	40.2	47	27.5	125	28.0	338
Partially dependent on others	8.6	104	22.6	51	11.3	53	12.6	209
Fully dependent on others	9.6	362	10.3	79	10.4	249	10.0	691
No. of dependants*								
None	48.4	10	97.7	4	51.5	3	58.0	17
One	48.6	45	20.8	10	42.0	45	43.2	100
Two	20.5	53	64.5	21	34.8	30	32.9	104
Three or more	2.9	59	0.0	12	3.1	46	2.7	117
Total	13.7	634	21.5	177	15.8	477	15.6	1238

Source: Author's calculation
N= Number of observations $p^* < 0.001$ $p^{**} < 0.05$
A $1.00 = about 45 rupees.

the relative contribution of those variables cannot be fully examined using the bivariate tables presented earlier, although these have provided fruitful insight into the nature of the relationship. Since living arrangements are governed by a host of socio-economic and demographic variables, it is necessary to control the effect of other variables in order to determine the net effect of each of the individual variables. Therefore, a multivariate analysis is needed to help bring out the net effect of each of these variables. In order to quantify the effect of these background variables on living arrangements, a logistic regression analysis has been carried out. Since in the present analysis the dependent variable is dichotomous in nature whether living alone (1) or in co-residence (0) , a logistic regression is appropriate to assess the influence of the explanatory variables on the dependent variable. The independent variables in the model are categorized as demographic, social and economic. Under the demographic variables age, sex, marital status and number of surviving sons and daughters are included as explanatory variables. Similarly, under the social and economic variables place of residence, level of education, social caste, possession of land and state of economic independence are included.

The results of the logistic regression analysis are presented in table 7. The results confirm that, after controlling for different background variables, the "number of surviving sons", "level of education", "state of economic independence" and "subregion" turned out to be the most significant variables in determining the living arrangements of older persons in Orissa. The direction of the relationship between "number of surviving sons" and "living alone" is negative -- the higher the number of surviving sons, the lower is the chance of the elderly living alone. The relationship of education to living alone shows that, although education is an important variable that determines the decision to live alone, only a few years of schooling may not necessarily equip older persons to lead an independent life. Significantly fewer older persons live alone if they have up to a secondary level of education compared with those who are illiterate, whereas a significantly higher proportion of elderly persons live alone when they have a higher than secondary level of education. Similarly, after controlling for all the variables, "subregion" turned out to be an important variable that determines the decision to live alone. Significantly, a higher proportion of elderly live alone in the southern subregion compared with the other two subregions. "Economic independence" is yet another variable that determines the choice of living alone. Significantly, a higher proportion of elderly who are economically independent live alone compared with those who are partially or fully dependent on others. Although bivariate analysis showed the existence of differentials in living arrangements with respect to demographic variables such as age, sex and marital status, they are not significant in predicting the choice of living arrangements when the effects of other variables are controlled.

Table 7. Binary logistic regression of living alone versus co-residence among the elderly in Orissa

Variables in the equation		Coefficient (β)	S.E.	Sig.	Odds ratio Exp(β)
Age					
60 - 69 years (ref.)				0.391	1.000
70 - 79 years		0.043	0.217	0.844	1.044
80 years and older		-0.654	0.499	0.190	0.520
Sex	Male (ref.)				
	Female	0.011	0.221	0.959	1.011
Marital status					
Never married (ref.)				0.000	1.000
Currently married		1.459	1.170	0.212	4.300
Widowed		0.411	1.179	0.727	1.509
Divorced/separated		1.917	1.670	0.251	6.802

(continued)

Table 7. *(Continued)*

Variables in the equation	Coefficient (β)	S.E.	Sig.	Odds ratio Exp(β)
No. of surviving sons*				
0 (ref.)			0.000	1.000
1	-1.547	0.246	0.000	0.213
2	-1.767	0.260	0.000	0.171
3 or more	-1.775	0.265	0.000	0.170
No. of surviving daughters				
0 (ref.)			0.813	1.000
1	-0.127	0.253	0.614	0.880
2	-0.247	0.260	0.341	0.781
3 or more	-0.180	0.263	0.494	0.835
Place of residence				
Rural (ref.)				
Urban	-0.358	0.277	0.197	0.699
State subregion**				
Coastal (ref.)			0.098	1.000
Southern	0.521	0.261	0.046	1.685
Northern	0.012	0.207	0.953	1.012
Social group				
Scheduled Tribe (ref.)			0.864	1.000
Scheduled Caste	0.218	0.304	0.472	1.244
Other Backward Caste	0.217	0.267	0.417	1.242
Upper Caste	0.209	0.310	0.501	1.232
Level of education**				
No education (ref.)			0.007	1.000
Up to secondary	-0.516	0.216	0.017	0.597
Secondary and above	0.562	0.463	0.225	1.753
Land holding (in hectares)				
Less than 0.2 (ref.)			0.263	1.000
0.2 - 1.0	-0.140	0.197	0.476	0.869
1.01 - 3.0	-0.430	0.277	0.121	0.650
More than 3.0	-1.080	0.767	0.159	0.340
State of economic dependence**				
Not dependent on others (ref.)			0.007	1.000
Partially dependent	-0.456	0.250	0.068	0.634
Fully dependent	-0.690	0.224	0.002	0.502
Constant	-0.926	1.180	0.432	0.396

Source: Author's calculation

$p^* < 0.001$ $p^{**} < 0.05$

Conclusion

It is observed that, as the number of surviving sons increases, significantly fewer older persons live alone, thus confirming the presence of sons as an important variable that determines co-residence. However, in order to get a more detailed picture, the characteristics of children, their marital status, location and income would also be useful in determining living arrangements, although unfortunately information in that connection is not available.

Similarly, the likelihood of living alone among older persons with higher education is much higher compared with those who are either illiterate or have had only a few years of schooling. Economic independence is also an important variable in determining the chances of living alone. There is less likelihood of the elderly living alone when they are fully or partially dependant on others, indicating the significance of individual income over household income in the decision on living arrangements. Similarly, subregion is yet another significant variable that determines the chances of living alone. In Orissa, a significantly higher proportion of the elderly residing in the southern subregion live alone as compared with their counterparts in the northern and coastal subregions. The significant difference in living arrangements with respect to subregions in Orissa might be true, especially since these three subregions are culturally different.

In view of the changing socio-economic and demographic scenario of India, increasing levels of education and income along with a simultaneous decline in fertility, it is likely that a higher proportion of older persons in India will be living alone in the future. Therefore, policies and programmes related to older persons may have to be designed so that they adequately address the needs of older persons living alone.

Endnotes

1 Here "older population" is defined as that proportion of the population aged 60 years and older.

2 In developed countries the elderly are defined as 65 years and older, whereas in developing countries the elderly are defined as those at 60 years and older.

3 A higher proportion of currently married elderly persons are living alone mainly owing to "living alone" being defined as: an older person living alone or with spouse but with no other kin.

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ASIA-PACIFIC POPULATION JOURNAL
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The Asia-Pacific Population Journal is published at least twice a year in English by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

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Contraceptive (In)Security in South-East Asia 3

In South-East Asia sexual and reproductive health needs remain substantial and are not adequately met by the current supply of contraceptive products and services. While financial and technical scarcity persists, it is the facilitation of the policy environment and the fulfilment of equity principles in the delivery of contraceptive methods that present the greatest challenges in achieving contraceptive security. A regional advocacy agenda should address the ideological objections to modern contraceptives and to people's contraceptive choices and ensure that contraceptive security is meant for all and not only for privileged groups and countries.

Social Impact of International Migration and Remittances in Central Asia 29

The dissolution of the former Soviet Union and the transition from a centrally planned to a market-based economy within the subregion of Central Asia has been accompanied by population movements which were unprecedented in modern history. While lack of reliable statistical data makes it difficult to assess the scope and scale of such movements in Central Asia, migration is predicted to rise substantially due to declining working-age populations in some countries, and high rates of population growth accompanied by relative economic disadvantage in others. This article attempts to explore key social issues emerging in relation to labor migration and remittances, and examines the impact of migration on communities in both countries of origin and countries of destination. It concludes with key policy recommendations, which include: instigating constructive regional dialogue on migration; focusing on gender-sensitive issues; undertaking policy measures to effectively address the needs of migrants; and creating better social protection and services for migrants and their families.

Economic Activity in Post Retirement Life in India 55

The article analyses trends in work participation and working life expectancy in post retirement life of persons aged 60 plus by primary, secondary and tertiary sectors to examine a correlation between longevity and post retirement economic activity in India. It was found that in India the average length of working life at 60 plus is 9.8 years for males and 3.9 years for females. Though the life expectancy at 60 plus for males had increased by 2.9 years over the period 1971-2001, working life expectancy for males had decreased marginally by 0.1 years during the same reference period. On the other hand, with a 4.2 year gain in longevity at age 60 plus among females during 1971-2001, their working life expectancy increased by 2.4 years during the same reference period. Work participation has shifted from the primary to the formal sector, which indicates an increase in productive activity in the post retirement period.

Contraceptive (In)Security in South-East Asia[i]

In South-East Asia sexual and reproductive health needs remain substantial and are not adequately met by the current supply of contraceptive products and services. While financial and technical scarcity persists, it is the facilitation of the policy environment and the fulfilment of equity principles in the delivery of contraceptive methods that present the greatest challenges in achieving contraceptive security. A regional advocacy agenda should address ideological objections to modern contraceptives and to people's contraceptive choices and ensure that contraceptive security is meant for all and not only for privileged groups and countries.

By Rosalia Sciortino*

The late 1990s saw the concept of "contraceptive security" defined as the ability of every person "to choose, obtain, and use quality contraceptives and condoms for family planning (FP) and for protection from sexually transmitted infections (STIs), including HIV" (USAID, 2008). The concept re-emphasizes the notion that contraceptive supplies[ii] are the cornerstone of family planning and STI/HIV prevention and that ensuring and maintaining the availability of contraceptive commodities – comprising hormonal methods (contraceptive tablets, injectables, implants, rings or patches), intrauterine devices (IUDs), barrier methods (condoms and diaphragms) and supplies to perform vasectomies and tubal litigations – is instrumental not only to attain better sexual and reproductive health (SRH), but also to reduce poverty and foster development (Finkle, 2003; PATH & UNFPA, 2006; IPPF, 2008).

The conceptualization of contraceptives as essential commodities for human well-being brought new urgency in addressing supply gaps caused by increasing demand in the face of insufficient funding and inadequate service delivery and logistics systems. Financing of commodities is being tackled through high-profile initiatives at the global level, but many challenges in building national capacity for commodity forecasting, procurement, financing, and delivery still remain. There is also recognition of the fact that efforts to provide contraceptives and other SRH supplies and services could not be separated from a broader socio-political environment and the overall functioning of the health system.

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To better understand how the interaction of global and local processes affect contraceptive use and choices at the regional and country levels, the status of contraceptive security in South-East Asia,[iii] a region that has received relatively little attention despite its substantial SRH needs, is explored in this article. The material presented is based on a synthesis review of published material, gray literature and internet sources, conducted in 2009 and published as a report a year later (Sciortino, 2010), and updated here.

The article is arranged in four main sections. In the first two sections, an overview of SRH in the region and the related contraceptive gaps are presented, while the third section deals with current efforts to provide contraceptive services in various South-East Asian countries. The article argues that existing needs are not yet fully met for reasons that are only partly of a financial nature. In the final section of the article, a regional advocacy agenda is proposed to enhance the delivery of contraceptive services and commodities and realize contraceptive security in South-East Asia.

SRH: a regional overview[iv]

In South-East Asia, SRH differentials are intertwined with socio-economic disparities. Thus, the relatively more advantaged countries – Brunei Darussalam, Malaysia, Singapore, Thailand and, to a certain extent, Indonesia, the Philippines, and Viet Nam – have better SRH indicators than resource-poor countries such as Cambodia, the Lao People's Democratic Republic, Myanmar and Timor-Leste.

In general, maternal mortality and morbidity rates are high, with six countries in the region having maternal mortality ratios (MMR) of over 200 deaths per 100,000 live births. The disparities between regions inside each country are substantial. In the Philippines, for instance, MMR estimates are 50 deaths per 100,000 live births in the National Capital Region, 160 deaths per 100,000 live births in region eight, and 320 deaths per 100,000 live births in a more disadvantaged autonomous region of Muslim Mindanao (Rosell-Ubial, 2008, p. 53). More generally, access to skilled attendants is lower among the poorest quintiles and MMR is higher in rural areas because of weaker infrastructural development, lower literacy levels and higher levels of poverty when compared to urban areas. Maternal morbidity has not been recorded properly, but the estimation of it being thirty times the number of maternal deaths (UNFPA, 2006, p. 2) implies a substantial burden of pregnancy-related illnesses in the region.

Table 1. Maternal health indicators for South East Asia, 2005

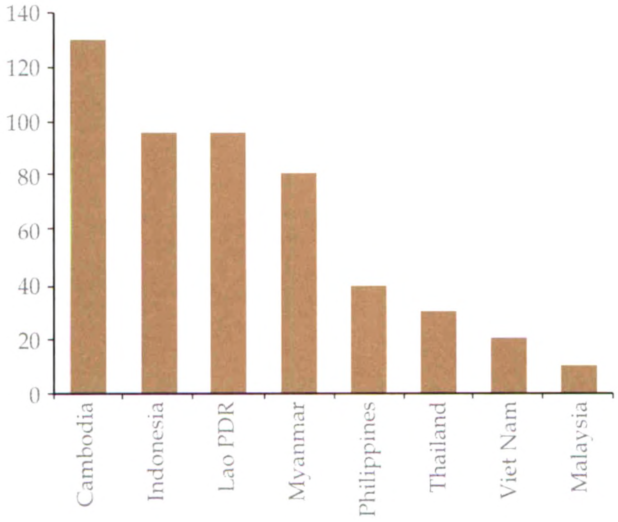
	MMR (per 100,000 live births)	**Range of MMR estimates**	**Lifetime risk of maternal death (1 in)**	**Number of maternal deaths**
Lao PDR	660	190-1 600	33	1 300
Cambodia	540	370-720	48	2 300
Indonesia	420	240-600	97	19 000
Timor-Leste	380	150-700	35	190
Myanmar	380	260-510	110	3 700
Philippines	230	60-700	140	4 600
Viet Nam	150	40-510	280	2 500
Thailand	110	70-140	500	1 100
Malaysia	62	41-82	560	340
Brunei Darussalam	13	3-47	2 900	1
Singapore	14	14-27	6 200	5

Source: World Health Organization et al (2007, p. 23-27)

In South-East Asia, in line with global patterns, 60 to 80 per cent of all maternal deaths can be attributed to obstetric haemorrhage, sepsis, obstructed labour, hypertensive disorders and unsafe abortions. Abortion-related mortality, however, is thought to be higher than the global average of 13 per cent, reaching 19 per cent of all maternal deaths in the region (UNFPA, 2006 p. 1-2, 11). Cambodia, Indonesia, the Lao People's Democratic Republic and Myanmar have the highest number of abortion-related deaths, while Malaysia, Thailand and Viet Nam have the lowest (see figure 1).

Although the region's post-abortion care is limited and, often, with no contraceptive provision (Warriner and Shah, 2006), except for Cambodia, Singapore and Viet Nam, abortion is illegal or officially limited to a few conditions. Abortion rates are still high, with Viet Nam and Indonesia having among the highest figures in the world. In Viet Nam, about 504,377 abortions or 38.7 abortions for every 100 live births were recorded in 2003 (Do Thi Hong Nga, 2008); and in Indonesia, 2 million induced abortions were performed in 2000, implying that the annual

Figure 1. Unsafe abortion-related deaths per 100,000 live births



Source: UNFPA, 2006 p. 11 (Adapted from IPAS Policy Fact sheet).

abortion rate is higher than that of Asia as a whole (37 and 24 abortions per 1,000 women of reproductive age respectively) (Sedgh and Ball, 2008, p.1).

STIs are widespread in the region. South-East Asia is a high-prevalence area for hepatitis B, and the World Health Organization (WHO) estimates that the largest proportion -almost 50 per cent - or about 340 million of new STI infections occurring each year happen in South and South-East Asia, especially among the youth (WHO 2007, p. 3). The regional estimate of HIV prevalence among adults aged 15-49 years old is relatively low, in the range of 0.2-0.4 per cent, but the absolute numbers are significant with about 1.7 million people in 2007 living with HIV/AIDS in South-East Asia (UNAIDS 2008). Thailand, Cambodia, Viet Nam, Myanmar and Indonesia are among the top six countries in Asia in terms of adult cases per 1,000 of population (ADB 2010, p. 96). While in Cambodia and Thailand the epidemic is slowing down, this is not yet the case with Indonesia and Viet Nam.

The major identified sources of HIV transmission are unprotected sex with irregular partners and the use of contaminated instruments for injecting drugs. More and more, however, new cases of infections are women who have acquired HIV from unsafe sex with their stable partners. In Thailand, this group accounted for more than 4 in 10 (or 43 per cent) of new infections in 2005 (UNAIDS and WHO, 2008, p. 16). In

Cambodia, husband-to-wife transmission has become the main transmission route accounting for two-fifths of new infections (Chaya, 2006, p. 5). In Malaysia, the largest proportion of infected women is married (CCR & Arrow, 2005, p. 20).

Contraceptive reach and demand

South-East Asia's reproductive health picture, with its high numbers of unwanted pregnancies, abortions and STIs, reflects the insufficient reach of contraceptive commodities and services. Although the region as a whole has a relatively high contraceptive prevalence compared to other parts of the developing world (Harvard Gazette, 2007), the absolute use of contraceptives in certain countries and groups remains low in spite of high unmet need. Moreover, traditional methods often account for a considerable proportion of the Contraceptive Prevalence Rate (CPR). The share of contraceptive users opting for periodic abstinence, withdrawal or country-specific methods range from 2 per cent in Thailand to 25 per cent in Malaysia (PRB, 2008, p. 76), and these official statistics do not include single adolescents and adults who often resort to traditional methods having limited access to modern methods.

As table 2 shows, contraceptive prevalence is the lowest in the poorest countries of South-East Asia. CPR in Timor-Leste is as low as 10 per cent while in Cambodia, the Lao People's Democratic Republic and Myanmar it is between 30 and 40 per cent. The Philippines and Malaysia, countries that have restrictive policy environments, demonstrate slightly higher CPRs of around 50 per cent, more than a third of which are traditional methods. At the other end of the spectrum, the middle- and high-level income countries of Indonesia, Singapore, Thailand and

Table 2. Contraceptive prevalence rates in South East Asia

	CPR any methods	CPR modern method
Brunei Darussalam	--	--
Cambodia	40	27
Indonesia	61	57
Lao PDR	32	29
Malaysia	55	30
Myanmar	37	33
Philippines	51	36
Singapore	62	55
Thailand	72	70
Timor-Leste	10	9
Viet Nam	78	67

Source: National DHS and other sources in PRB 2008, 13.

Viet Nam, which have had long-standing family planning programmes, boast high CPRs in the 50-70 per cent range and, with the exception of Viet Nam, a small proportion of traditional methods.

Within countries, contraceptive use increases with women's education and wealth status. In Cambodia, non-users and users of traditional methods are concentrated in the poor quintile, especially in rural areas (Cambodia et al, 2005). Disparities also occur along geographical and ethnic boundaries. In 2003, the CPR of married women in Thailand was estimated to be as high as 83 per cent in the northern region, but around 70 per cent in the southern region where the Malay population is concentrated (CCR and ARROW, 2005, p. 14). In Viet Nam, the Central Highlands, with their diverse ethnic minority population, show the lowest CPR in the country (Teerawichitchainan, 2008; UNFPA, 2009). Supply and demand side barriers hampering access and use of contraceptives among disadvantaged groups are many, such as costs, distance to service delivery points and lack of information and knowledge, as well as cultural and social values (Sciortino, 2008).

The gap between women's fertility preferences and their use of contraception, albeit reduced in recent years, has still to be closed. According to estimates, in South and South-East Asia in the 2000-2005 period 11 per cent of married women of reproductive age had an unmet need for contraception both for spacing and limiting births. These figures overshadow great inter- and intra-country variance, with rates of unmet needs for family planning varying from 40 per cent in the Lao People's Democratic Republic and 30 per cent in Cambodia and the Philippines to 9 per cent in Indonesia and 5 per cent in Viet Nam (Sonfield, 2006; PRB, 2008). In the Philippines—a country, where more than half of all pregnancies are unintended—the percentage of married women with unmet needs averages 18 per cent in the National Capital Region of Metro Manila, but reaches 60 per cent in the autonomous region of Muslim Mindanao (ARMM) and 87 per cent in the ARMM poor quintile (Darroch et al, 2009, p. 2).

Information about the unmet need of never-married women of all ages is not readily available as they are not included in CPR data, reflecting the official position of most South-East Asian Governments that contraception is a need for married couples only. The exclusion of this vulnerable group is also reflected in their not being counted in forecasting of commodity demand, in management information systems and in outreach efforts. Not-yet-married young people of both sexes are also overlooked in information gathering as well as services (Hull and Mosley, 2008; Khuat Thu Hong, 2003). Still, based on the increasing number of single, sexually active, adult women in South-East Asia, the many who decide not to marry (Jones 2005) and the growing number of young people of both sexes having pre-marital relations, it can be deduced that unmet needs are high in this population group. Other underserved populations include ethnic communities, migrants, refugees and displaced people, marginalized urban communities and people living with HIV, to name a few.

It also needs to be noted that, discouraged by entrenched gender values, the role of men in fertility reduction remains minimal, with negligible numbers of male sterilizations, limited condom use and a widespread preference for withdrawals. In particular, there is an unmet need for condoms. Socio-cultural barriers hamper open condom promotion and family planning programs prefer long-lasting methods from a population control perspective. When national AIDS programs promote mainly male condoms to prevent HIV transmission, they limit their provision to groups considered at risk such as sex-workers, injecting drug users and men who have sex with men (MSM). In Indonesia, even in government programmes, differentiated branding and packaging of condoms is envisaged in social marketing efforts for those groups as if to keep them apart from the "safe" general population.

As a result of this dual approach, condom use is widespread in these so-called risk-groups but remains low overall. In Cambodia, for instance, from 1997 to 2003, consistent condom use among police officers grew from 65.6 to 94.2 per cent in commercial sex interactions, but only from 11.4 to 41.2 per cent in intimate relationships. More generally, "less than 20 per cent of sexually active Cambodian men and women have ever used a condom, representing an enormous unmet need" (PSI, 2004, p. 2). Inconsistent condom use is also rife, implying opportunities for greater use of condoms if adherence could be increased. In Singapore, in 2004, 45 per cent of the surveyed clients of sex workers used condoms inconsistently (Wee *et al*, 2004) and in Indonesia less than 10 per cent of male clients consistently used condoms though more than 50 per cent were married or had regular partners (Hudiono, 2006). Still, women have no alternative contraceptive methods at their disposal, as female condoms, available in parts of Asia since 1995, remain unfamiliar and poorly accessible (Vijerasa, 2009).

If the existing gaps are addressed, it could be expected that the already large demand for contraception in South-East Asia will expand. In Indonesia, for instance, it has been calculated that satisfying the unmet need of married women for spacing (4 per cent) and limiting (5 per cent) births would result in an increase in CPR from 61.4 to around 71 per cent (BPS and Macro International, 2008,). The increase would be greater if excluded groups such as single men and women are included, and if prevention of STI/HIV is integrated in reproductive health programmes for the general population. Growth in demand can also occur if the switch from traditional to modern methods increases, discontinuation of modern contraceptive use is reduced, and adherence in contraceptive use, including consistent use of condom use, is enhanced (see Cleland and others 2006).

An additional driver of future demand for contraceptive services and commodities is South-East Asia's expanding population, with large numbers of young people entering reproductive age. Although fertility in the region started to decline in the 1960s and is now reaching the replacement level of about two births per couple, the overall population is expected to grow from 586 million in 2008 to 826 million in 2050 as the demographic momentum continues to build (Hirschman, 2001; PRB, 2008). Nevertheless, countries are at different stages of demographic transition. As table 3 shows, while Singapore and Thailand are well below replacement levels, Cambodia, the Lao People's Democratic Republic, the Philippines and Timor-Leste have total fertility rates in the range of 3.0 to 6.5 children per woman. Consequently, while in Singapore and Thailand the share of people below 15 years is around 20 per cent and declining, in other countries in the region it is in the 25 to 45 per cent range and generally growing. How these rates translate into absolute numbers depends on the population of various countries, especially since population distribution in South-East Asia is very unequal. The least populated country in the region, Brunei Darussalam, is expected to grow from 400,000 people in 2008 to 600,000 people in 2050, while Indonesia, the most populous country in the region and the fourth most populous country in the world, is projected to increase from 239 million in 2008 to 341 million in 2050 (PRB, 2008). In terms of population below 15 years of age, and thus potential future contraceptive users, even if their share in both countries is around 30 per cent, Brunei Darussalam would account for about 120,000 while Indonesia for more than 69 million contraceptive users.

Table 3. Selected demographic data and estimates for South East Asia

	Births per 1,000 population	**Total population (millions) (2008)**	**Projected population (millions) (2050)**	**Total fertility rate (TFR)**	**Per cent of population of ages**	
					<15	**65+**
Brunei Darussalam*	19	0.4	0.6	2.0	30	3
Cambodia	26	14.7	30.5	3.5	36	4
Indonesia	21	239.9	343.1	2.6	29	6
Lao PDR	34	5.9	12.3	4.5	44	4
Malaysia	21	27.7	40.4	2.6	32	4
Myanmar	19	49.2	58.7	2.2	27	6
Philippines	26	90.5	150.1	3.3	35	4
Singapore	11	4.8	5.3	1.4	19	9
Thailand	13	66.1	68.9	1.6	22	7
Timore Leste	42	1.1	3.0	6.7	45	3
Viet Nam	17	86.2	112.8	2.1	26	7
South East Asia	20	586.0	826.0	2.5	29	6

Source: PRB, 2008; *UNFPA, 2008:8.

Considering these and other factors, an augment in contraceptive use and demand is projected for most of the region. Incremental increases are expected rather than great leaps, with a possible exception in the use of condoms, if the environment becomes more enabling. Still, numbers of additional contraceptive users will be great, requiring a greater financial and political commitment by countries in the region in the realization of contraceptive security.

A typology of contraceptive landscapes

In South-East Asia, the degree to which governments are uncommitted to contraceptive security varies according to religious, demographic and economic reasons. Thailand stands out in the region as coming close to contraceptive security, while all other countries have more insecure environments. Based on diverse contraceptive landscapes, a typology can be construed consisting of: (a) countries taking a pro-natalist stance for moral or demographic reasons that oppose or reduce access to modern contraceptives, namely Brunei Darussalam, Malaysia, the Philippines, and Singapore; (b) countries like Indonesia and Viet Nam, with strong family planning programs that emphasize the methods considered more effective in achieving population control, yet neglecting short-term contraceptives; and (c) countries such as Cambodia, the Lao People's Democratic Republic, Myanmar and Timor-Leste, hampered by a lack of resources in the provision of contraceptive supply and services, with some countries also not fully supportive of contraception.

Countries with pro-natalist policies

In the first category of pro-natalist countries, Brunei Darussalam, Malaysia and the Philippines view the use of modern contraceptives as against their religious tenets, either because of strict Islamic interpretations in Malaysia and Brunei Darussalam or because of conservative Catholic views in the Philippines. In Singapore, selective procreation policy is considered essential to long-term development because the country has one of the "lowest-low" fertility rates in the world (Yap Mui Teng, 2007). Conservative ideologies in all these countries further condemn condom promotion for HIV/STIs prevention as being against "family values". Even in Malaysia, South-East Asia's second major producer of condoms, including female condoms, thanks to its ready supply of rubber (Howe, 2005, p. 6), the Ministry of Health avoids direct procurement and distribution of condoms out of concern that it could be "misinterpreted as advocating promiscuity", leaving the necessary task to NGOs and the for-profit sector (Medical News Today, 2007).

Interestingly Malaysia, the Philippines and Singapore all had strong population control policies in the 1960s and 1970s and later took the current stand of abandoning modern contraceptives and instead promoting traditional methods. In Malaysia, use of the contraceptive pill, as the most popular method of contraception, dropped almost by half in the last three decades from 50 per cent in 1974 to 27 per cent in 2004, with many switching to the rhythm method (now the second-most popular method accounting for about 18 per cent of users) (Nai Peng Tey, 2007, p. 2). In the Philippines, emphasis on female sterilization has given way to the promotion of natural family planning, and only 33 per cent of married women in 2003 used modern contraceptives, of which, in a reflection of the past, 10 per cent were sterilizations (Connell, Cisek and Robertson, 2005, p. 9). A clear reduction in the use of modern contraceptives (and especially of sterilization) and a parallel increase in the use of traditional methods were also observed in Singapore after the introduction of pro-natalist policies in the 1980s (see Ross and others, 2005).

Table 4. Contraceptive use among currently married women 1982 and 1997 in Singapore

Date	Total prev.	Modern methods	Sterilization		Pill	Injectable implant	IUD	Male condom	Vaginals	Traditional
			Male	Female						
1982	74.2	73.0	0.6	22.3	11.6	-		24.3	14.2	1.2
1997	62.0	53.0	0.2	15.8	10.0	-	5.0	22.0	-	9.0

Source: MOH, Population Planning Section Data in Yap Mui Teng, 2007:213).

There is minimal updated information available on contraceptive use and supplies for Malaysia and Singapore from either governmental or non-governmental sources and no accessible data for Brunei Darussalam[v]. This lack of information reflects the reduced financial support for the promotion and provision of modern contraceptives in public services. In the Philippines, the central government has opted not to directly finance and procure modern contraceptives, tasking instead decentralized local government units (LGU). However, LGUs do not allocate sufficient resources, lack the capacity to forecast, procure or deliver contraceptives and/or oppose performing this task on religious grounds (Rauhala, 2008). A large percentage of total requirements (skewed towards contraceptive pills and sterilization kits) have historically been provided by the United States Agency for International Development (USAID), but since its phase-out in 2008, the United Nations Population Fund (UNFPA) has provided pills and injectables as a stop-gap measure on a cost-share arrangement with local governments.

Worries remain that the needs of the very poor, who are being estimated at around 30 per cent of the existing users of donated contraceptives, are not being met (Darroch et al, 2009, p. 6; Deliver, 2007, p. 4; Connell et al, 2005, p. 24). Commercial suppliers focus on the top end of the market, while social marketing organizations, often supported by USAID to reduce the burden on LGU budgets and ensure availability of contraceptives, are interested in lower-middle and upper-low income families, leaving the low-priced segment less well served (Connell et al, 2005).

In Malaysia, under the current reproductive health policy focusing on birth spacing (following the slogan "not to soon, not too late, not too close"), contraceptive methods in public health facilities are only accessible to married couples; there are limits for contraceptive advertising and educative programmes have been discontinued (CCR and Arrow, 2005). It is the NGOs, mostly the Federation of Reproductive Health Associations, Malaysia (FRHAM) and its 13 state members associations that have taken upon themselves a task of making contraceptives available at a subsidized cost. Private outlets sell a wide variety of contraceptives, including emergency contraceptives, but this option is reserved for those who can afford higher prices. Similarly, in Singapore, with a decrease in subsidies to commodities and the closure of government family planning clinics in the mid-1980s, private sources (pharmacies and drugstores) have substituted public sources (Yap Mui Teng, 2007, p. 206). The need for contraceptives to prevent unwanted or unintended pregnancies, however, remains, especially among women with economic constraints. AFP reported that abortions, legal in Singapore, increased during the financial crisis from 11,933 in 2007 to 12,222 in 2008 (Bristow, 2009).

Countries enforcing family planning programmes

At the other extreme end of the population policy spectrum, Indonesia and Viet Nam have taken an anti-natalist stand, enforcing a two-child policy to stem population growth. Initiated in the 1960s, the Indonesian Family Planning Program has been hailed as a demographic success contributing to the expansion of modern contraceptive use and halving the total fertility rate. Today, Indonesia is close to replacement level while the program has been scaled back, but the maintenance of the small family norm remains a priority in view of the still significant increase in population discussed in the previous section. Similarly Viet Nam, after decades of strong population control, relaxed the two-child policy in 2003, but is continuing the thrust of previous policies to address the "demographic bonus" characterized by an age dependency ratio of under 50 per cent as derived from having just achieved below-replacement levels (UNFPA, 2009).

The policy focus approving family planning, however, does not necessarily imply "full availability" of contraceptive methods, and thus contraceptive security. Both countries have in fact emphasized long-acting and permanent methods of family planning (LAPMs) and discouraged non-use as well as the use of less reliable temporary methods (as perceived by governments), attracting criticism for their disregard of women's choice and of quality of care concerns. Both countries have also opposed condom promotion for HIV/STIs among the general population having taken a conservative stand when it comes to sexuality. More particularly, Indonesia's family planning programme initially promoted IUD and sterilization (mainly tubal litigation). In the early 1980s it introduced implants - even if at the time still untested– and remains one of the few countries in the world to have used them in large numbers, notwithstanding the lack of a proper support system (Smyth, 1991; Hull and Mosley, 2008). Viet Nam has provided hormonal implants, IUDs, female sterilization, and vasectomies through its public health system (NCPFC and ORC Macro, 2003). IUDs, in particular, have been a permanent feature, making Viet Nam the only country in South-East Asia, on par with a handful of countries in the world, where IUDs are the most used contraceptive method.

In both countries, while the public sector has remained centred on LAPMs, contraceptive choices are expanding in the private sector. This is especially true of Indonesia where provisions for contraception have been privatized in the last decade and where, in 2007, 69 per cent of married women purchased contraceptives from private sources, while in Viet Nam, 86 per cent of acceptors are still served by the public sector (BPS and Macro International, 2007, p. 86; NCPFC and ORC Macro, 2003). Private practices and clinics in Indonesia have opted for a "cafeteria-contraceptive basket" approach selling to their clients more diverse and branded products. Still providers' biases remain, this time leaning towards hormonal injections, recurrent shots being perceived as "an ideal way to lock in a flow of payments" (Hull and Mosley 2008, p. 18-19). In Viet Nam, the source of supply varies depending on the type of method used with an increasing number of private pharmacies and outlets opting for pills, three-month injectables and condoms. Their sales are expected to grow as the market liberalizes further, in line with the 2006-2015 national strategy on contraceptive commodity security developed with the support of UNFPA and other international agencies, which advocates for more involvement of non-governmental sectors and social marketing to encourage greater diversity in contraceptive supplies, at least for those who can afford it. Moreover, the Governments of Viet Nam and Indonesia have preferred to defer distribution of condoms for STIs and HIV prevention to international and local NGOs.

In view of the large consumer base, Governments in both countries favour local production of contraceptive commodities. Indonesia has the capacity to produce all modern contraceptive methods, thus ensuring a sustainable supply at low cost. Ten contraceptive producing factories operating in the country have a reputation for being reliable manufacturers (Armand 2006, p. 22), although not all meet international export standards as defined in the World Health Organization Good Manufacturing Practices and the Pharmaceutical Inspection Cooperation Scheme. With the major donor USAID completing its phase out in 2006, Indonesia has become self-reliant in the funding of contraceptive supplies for its now much-reduced public sector (Hull and Mosley, 2008). External support is still received for use of condoms for STIs/HIV prevention among sex-workers and other groups considered at risk under the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Viet Nam has supported local production of contraceptives and import from other Asian countries since the 1990s (Feuerstein 1994), but, due to economic constraints, has not yet achieved self-reliance, and in 2006 was among the 10 top recipients of donor support (UNFPA, 2008, p. 22). Other donors, especially of contraceptive pills and condoms, include the European Union (EU) and bilateral agencies such as German's Gesellschaft für Technische Zusammenarbeit (GTZ) and the United Kingdom's Department for International Development (DFID).

Resource-poor countries

Irrespective of their views on family planning and STI/HIV prevention, the poorest countries of South-East Asia simply do not have the means to address the great SRH needs of their people. Cambodia, the Lao People's Democratic Republic, Myanmar and Timor-Leste are largely dependent on foreign aid, including for their contraceptive delivery systems. Although these systems vary, management of family planning activities at the national and local levels is particularly weak, funding is segmented, personnel and equipment are insufficient; and the processes of clearing, storing and delivering commodities for the public sector inefficient. Stock-outs are not uncommon and facilities, especially in rural areas, are scarce and lack basic requirements such as clean water, waste disposal and energy systems. Product safety and efficacy are a concern as fake and outdated smuggled products commonly circulate to fill the void. As a result, contraceptive services are not only limited, but also of poor quality, with method failure a common problem.

In Cambodia and Myanmar large private sectors compensate somewhat for the failing public system, providing contraceptive services at a cost throughout the country. In Cambodia, the public sector is the main provider of female sterilization and injectables, while the commercial private sector is the lead provider of IUDs and social marketing accounts for a majority of condoms and pills (UNFPA, 2007; 2007a). In Myanmar, the private sector is composed mostly of providers' private practices. NGOs and social marketing outlets sell male and female condoms, pills as well as one- and three-month injectables, IUDs and emergency contraception (UNFPA, 2002). In the other two countries, the public sector is the major provider of contraceptive services, offering in Lao People's Democratic Republic two types of combined pills, a mini-pill, three-month injectables, IUDs, male condoms and female sterilization, and in Timor-Leste mainly injectables, but also IUDs, pills and implants are offered (UNFPA, 2001; 2007b; 2008).

Irrespective of the public-private mix, the very poor are dependent on public services, when they can access and afford them, a cheaper option in comparison with the private sector. Even if the very poor get free services or a cost exemption, the targeting and waiver system is inefficient and providers often charge fees in order to compensate for budget shortcomings, whereas subsidies and other pro-poor financial schemes, when available, are fragmented and insufficient (Sciortino, 2008).

International aid is crucial to enhance contraceptive security. In Cambodia, foreign donors finance most contraceptives and have formed a Commodity Security Working Group (CSWG) to project and address future contraceptive supply needs. The German government-owned development bank Kreditanstalt für Wiederaufbau (KfW) has been the major donor since 1993 and provided contraceptive supplies for public health services and social marketing until 2011. In addition, USAID and UNFPA provide pills and injectables and GFATM condoms for social marketing efforts (UNFPA, 2007; 2007a). There are concerns that the purchase of Western-manufactured brands, such as those procured with KfW funding, is unsustainable because, as is shown in table 5, the gap in resources will increase once donors gradually phase out, and it is suggested that donor agencies rather procure cheaper reliable generic contraceptives (Hall and Chhuong, 2006:4; UNFPA, 2007). More sustainable strategies are also needed for Lao People's Democratic Republic and Timor-Leste, where contraceptive services are fully dependent on international aid. In both countries, UNFPA funds most supplies and GFAMT and USAID support social marketing of condoms among groups considered at risk (UNFPA, 2008; USAID, 2008a). In Myanmar, despite economic sanctions, support has been provided on humanitarian grounds, with DFID and UNFPA as the primary source of generic commodities (condoms, pills, injectables and IUDs) for the public sector, and bilateral donors and foundations investing in social marketing and outreach work of NGOs (UNFPA 2002; PSI 2010). Still, foreign aid remains insufficient to cover the total unmet need for contraception and for STI / HIV prevention.

Table 5. Projected resources needs, committed resources and gaps 2007-2015, Cambodia (in $100,000)

Year	Total projected resources need	Resources need in 6-month buffer stock	Expected committed resources	Gap (unmet need)
2007	2 270	3 405	3 258	147
2008	2 520	3 780	3 488	292
2009	2 780	4 170	3 488	682
2010	3 050	4 575	1 168	3 407
2011	3 330	4 995	1 168	3 827
2012	3 630	5 445	150	5 295
2013	3 930	5 895	200	5 695
2014	4 240	6 360	200	6 160
2015	4 570	6 855	200	6 655

Source: UNFPA 2007a:11.

Scarcity of means is compounded by a political inclination to ignore or discourage contraception, with governments preferring to invest their few resources into other development areas. In Timor-Leste, modern contraceptives are not well-accepted by the Catholic Church (Hayes 2010), and there is a reluctance to promote safe sex and condom use among the general population.

A special case

Compared to the other countries in the region, Thailand stands out for its long-standing commitment to contraceptive security for both family planning and STI/HIV prevention. Since the beginning of family planning efforts in the late 1960s, Thailand took a unique path in controlling population growth by: integrating family planning activities into the health system; using auxiliary personnel in the provision of contraceptives; adopting a cafeteria approach inclusive of short-term methods and methods for men such as condoms and non-scalpel vasectomies; promoting local production of contraceptives; and engaging NGOs in mobilizing communities and integrating family planning into community development (Rosenfield, & Min, 2007; WHO, 2003).

Today, as shown in table 2, Thailand has the highest CPR in South-East Asia thanks to an almost exclusive use of modern contraceptive methods, foremost contraceptive pills, followed by female sterilization and injectables. Public contraceptive services are highly accessible to adult women and men and there are plans to provide services for married and unmarried male and female youth, to further expand coverage and specifically reduce adolescent pregnancy. Contraceptive methods are provided "conveniently, largely free of charge, without incentives, and with controls for quality and safety" (WHO, 2003). Family planning is part of the preventive and promotive SRH services covered under Thailand's universal insurance scheme, as are condoms for STI/HIV prevention, while abortion in cases of rape and risk to maternal health is covered under the curative services package (Teerawattananon and Tangcharoensathien, 2004). Many contraceptive brands, including emergency contraceptives, are also on sale at affordable prices at pharmacies, and other outlets.

Initially with foreign support, Thailand's family planning efforts have become self-sufficient. Contraceptive commodities are produced in locally developed formulation and brands for internal use and export. Thailand is a supplier to UNFPA, various developing countries in Africa and its neighbours and often provides technical assistance internationally in the different aspects of manufacturing, quality control, storage, marketing, and distribution of contraceptive commodities (Hall, 2006).

Towards a regional advocacy agenda

In South-East Asia, governments remain challenged to fulfil the many urgent reproductive health needs of their populations. Great strides have been made toward achieving contraceptive security, but they are still not sufficient to guarantee universal access to a wide range of quality contraceptives for family planning and disease prevention, nor are they adequate to meet the expected increase in demand as the regional population continues to grow and a large number of young people enter reproductive age. While tailored strategies should take into account the specific contraceptive landscapes of each country, there are common issues that should be identified as central to a regional advocacy and intervention agenda, as they present the greatest challenge in achieving contraceptive security, namely the realization of an enabling policy environment and the promotion of greater equity across and within countries.

More particularly, efforts at the regional and national levels should address the ideological opposition to modern contraceptive services and commodities, and to people's SRH choices grounded in religious as well as demographic objections, as it disables contraceptive security and precludes the gathering of information, accurate planning and effective logistics and delivery systems. For South-East Asia as a whole, the exclusive focus of contraceptive services on married couples and the sensitivities around condom use and sexuality should be questioned. In particular, governments should recognize that the unmet need for contraceptive supplies exists not only in marriage, but also among the growing number of single women and girls. What Hull and Mosley (2008, p. 8) wrote about Indonesia, actually applies to many countries in South-East Asia:

> "national family planning program[s] explicitly excludes unmarried women (and men), therefore these women receive little attention… This policy may have been rational 40 years ago when the family planning program began and most women, with no opportunity for education, married and began childbearing early. But with development and urbanization, times have changed dramatically, as has the demographic picture and sexual behaviour of unmarried women, yet the old policies remain."

Much still needs to be done to emphasize the male role in contraception and HIV prevention, assuring promotion of male contraception methods (vasectomies and condoms) in SRH services. At the same time, female condoms should be promoted more vigorously so that girls and women, in regular as well as non-regular relationships, could control the means of protection from HIV and unwanted pregnancies.

In view of the ongoing demographic transition in the region, it is further important to emphasize that fertility decline does not justify a neglect of contraceptive services that should rather transform into more comprehensive SRH services that integrate family planning and HIV/STIs prevention and include linkages with safe abortion. Integration, demonstrated by Thailand, should be seen as a strategy to optimize resources, enhance universal access to contraceptive supplies and improve SRH outcomes. To achieve the desired integration, barriers that keep family planning and HIV prevention programmes apart ought to be addressed, including de-stigmatizing sexual behaviour and eliminating the common practice of differential branding and packaging of condoms depending on their ascribed purpose.

Parallel to efforts directed at fostering an enabling environment, efforts should be directed at promoting equity concerns across and within countries. Cambodia, the Lao People's Democratic Republic, Myanmar and Timor-Leste deserve continued attention by the foreign aid community in view of their poorer SRH indicators and lack of resources. However, strategies should be directed at diversifying funding so as to reduce dependency from major sources and allow more negotiating power in deciding procurement parameters, including advocating for contributions from the wealthier countries in the region, especially Singapore. Mechanisms could also be developed for joint regional procurement and storage of contraceptive commodities, preferably less expensive generic products of good quality, maximizing the opportunities that may be derived from the fact that three countries in South-East Asia – Malaysia, Indonesia and Thailand – are significant producers of contraceptive supplies, and that South-East Asia is close to both India and China, two of the largest producers of cheaper goods.

An equitable perspective is also crucial to avert the creation of an underclass of people excluded from essential health commodities and services or having access to services of lesser quality, which is currently the case. An evidence-based discussion should be promoted about the distributional impact of privatization and decentralization efforts on contraceptive supplies, access to services, costs and standards of care and SRH outcomes for diverse groups in society. While, as discussed before, the involvement of the private sector, and especially social marketing organizations, appear to compensate for the weaknesses of the public sector and expand the reach of services and access to commodities and contraceptive choices, unregulated privatization may not fulfil the universality and equity principles implicit in the concept of contraceptive security. Greater government stewardship is needed in determining the "right" mix of private (both commercial and not-for-profit) and public services and in regulating the market in a way that endorses equitable services. As the majority of the poor rely on the public sector for their health needs, it will be crucial to ensure that public services, especially when decentralized, are of a comparable standard to private services to avoid inefficiencies of creeping market segmentation.

Moreover, the access to and affordability of contraceptive supplies and services should be enhanced. More efforts should be directed at expanding the outreach of activities to rural areas and other less-served areas, addressing supply and demand side barriers to reduce socio-economic disparities in contraceptive security. Payment systems, especially in the public sector, also require reform. The experience of Thailand shows that a universal coverage system contributes to the affordability as well as the wide availability of contraceptives in an effective manner. Countries with a similar level of economic development as Thailand should work towards establishing national insurance schemes comprising a reproductive health package that ensures that contraceptive commodities essential to the population's welfare and the development of the country are covered. After all, contraceptive security in its broad sense of availability of a wide range of quality contraceptives is meant for all and not only for the advantaged groups of society.

Endnotes

[i] This article is based on a synthesis report prepared by the author to sustain advocacy efforts of the Asia Pacific Alliance (APA), which was published by APA in collaboration with the Institute for Population and Social Research, Mahidol University in 2010 with the title "Achieving Contraceptive Security and Meeting Reproductive Health Needs in Southeast Asia". The views presented in this article are those of the author and do not reflect those of the organizations she is or has been associated with.

[ii] In the following, "contraceptive supplies/commodities" as a category will include condoms for both contraception and HIV prevention unless specifically distinguished for clarity purposes.

[iii] South-East Asia is composed of Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.

[iv] Please note that the figures presented are not always consistent as different sources use different calculations and criteria. The same source may also have inconsistencies as it derives figures from disparate studies. Also when comparisons of countries are made, numbers are only approximately comparable due to variation in the timing of the surveys and in the details of the questions.

[v] For this reason Brunei Darussalam is barely discussed.

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Social Impact of International Migration and Remittances in Central Asia

The dissolution of the former Soviet Union and the transition from a centrally planned to a market-based economy within the subregion of Central Asia has been accompanied by population movements which were unprecedented in modern history. While lack of reliable statistical data makes it difficult to assess the scope and scale of such movements in Central Asia, migration is predicted to rise substantially due to declining working-age populations in some countries, and high rates of population growth accompanied by relative economic disadvantage in others. This article attempts to explore key social issues emerging in relation to labor migration and remittances, and examines the impact of migration on communities in both countries of origin and countries of destination. It concludes with key policy recommendations, which include: instigating constructive regional dialogue on migration; focusing on gender-sensitive issues; undertaking policy measures to effectively address the needs of migrants; and creating better social protection and services for migrants and their families.

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Introduction

The *Human Development Report 2009: Overcoming Barriers: Human Mobility and Development*, published by the United Nations Development Programme (UNDP), indicates that both countries of origin and host countries have reaped benefits from the sharp rise in migration flows in recent years. The economies of countries of origin as well as the local communities where migrants originated have gained from financial remittances. In addition, social remittances have improved the quality of life in local communities. When migrants move under safe conditions, social benefits are typically found in better health and education prospects. The benefits are equally strong for destination communities. Contrary to popular opinion, migrants do not crowd out local residents in the job market, but instead, tend to improve employment rates and stimulate investment in new businesses and initiatives. In Europe, migrants also help narrow gaps created through demographic transition resulting from ageing populations (UNDP, 2009b).

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The dissolution of the Union of Soviet Socialist Republics (USSR) and the transition from centrally planned to market-based economies within the subregion was accompanied by unprecedented population movements, both external, exiting from the former Soviet Union as well as internal, moving within the subregion. Migration flows were a result of rising unemployment, growing poverty, "transparent" borders, political instability and military conflicts. Lack of reliable statistical data makes it difficult to assess the scope and scale of population movement, but at least two waves of migration occurred within the subregion during the past three decades.

The first wave took place roughly between the mid-1980s and mid-1990s, and included ethnic and religious groups taking advantage of the newly opened borders to hold family and community reunions, with internally displaced persons (IDPs) being resettled and refugees fleeing from local conflicts in the wake of the dissolution of the Soviet Union.

The second wave represented labour migration, which is the base for this study. Labour migration started in Central Asia in the late 1990s, with a transition to market economies and structural reforms initiated within the subregion. As there is no universally accepted definition of labour migration, for the purposes of this study we refer to it as the cross-border movement of people for the purpose of employment. As noted above, labour migration became widespread over the past decade, especially within newly independent States and was particularly driven by economic factors. In fact, in the years leading up to 2011, this type of migration started to play an important role in the countries of origin as a significant livelihood strategy. Remittances transferred by migrants not only contributed to individual households, but also had a considerable impact on the economies as a whole, particularly those of Armenia, Kyrgyzstan, Tajikistan and Uzbekistan.

This study is based mostly on a review of existing documents and on both primary and secondary data sources, including those in Russian language. The written materials, reviewed by the author, were supplemented by interviews with migrants from rural areas of Uzbekistan.

These interviews, while being not necessarily representative of all the countries referred to in this article, still serve as a source of first-hand experience. Despite the fact that labour migration is a relatively new phenomenon in the subregion, the subject itself and its related issues, such as forced labour and human trafficking, have generated considerable research in recent years. However, there are still many gaps and challenges in this area, especially with regard to data, which are often limited and not easily accessible. In addition to issues related to data quality, some substantive areas of economic migration require greater clarity and explanation. While there is some level of consensus about both the positive and negative aspects of labour migration, questions remain over which impact is stronger and what can be done to mitigate negative impact. Consequently, the article attempts to explore key social issues emerging in relation to labour migration and remittances, and to provide an overview of its impact on communities in the subregion. However, given the lack of sufficient data, this paper cannot claim to be fully comprehensive on the subject.

Current context

All members of the Commonwealth of Independent States (CIS) are affected by migration, as countries of origin, destination or transit. For the most part, countries in Central Asia, Ukraine and Moldova are countries of origin for migrants heading to the Russian Federation, while Kazakhstan has recently emerged as a new destination point. Besides the Russian Federation and Kazakhstan, workers from Central Asia also migrate to other countries, but to a lesser extent. In 2009, the Russian Federation ranked among the top remittance sending countries in the world, second only to the United States of America (World Bank 2011b).

Key factors leading to labour migration in the region are population surplus related to opportunities, especially in rural areas, and the search for jobs and economic opportunity.

Demographic and social trends and conditions vary greatly across CIS. For example, Kyrgyzstan, Tajikistan and Uzbekistan have the fastest growing populations. According to the Ministry of Labour and Migration, the annual surplus of human resources in Kyrgyzstan is approximately 100,000 people and for the first nine months of 2010, it was 80,000 people (Kyrgyzstan, 2010). In Uzbekistan, according to the national statistical agency, the population reached 27,767,100, in 2009, increasing roughly by more than 400,000 people annually (Uzbekistan, 2011). Some experts are of the view that the numbers might be even higher considering that no census has been carried out in the country since 1989.

Table 1. Population in selected CIS countries, 1980-2009

Country	1980	1990	2000	2009
Armenia	3 057 721	3 544 700	3 081 000	3 243 729
Azerbaijan	6 160 500	7 175 200	8 048 600	8 947 314
Belarus	9 627 311	10 189 343	10 004 958	9 576 045
Georgia	5 048 259	5 438 850	4 418 300	4 469 200
Kazakhstan	..	16 328 102	14 883 626	15 643 928
Kyrgyzstan	3 617 405	4 391 229	4 887 550	5 477 600
Moldova, Republic of	4 011 255	4 361 734	3 639 592	3 565 603
Russian Federation	138 126 583	147 662 055	145 559 208	141 909 244
Tajikistan	..	5 302 480	6 188 366	7 373 800
Turkmenistan	..	3 743 167	4 891 598	..
Ukraine	49 609 333	51 452 034	49 246 305	45 872 975
Uzbekistan	..	20 414 770	24 650 414	28 171 470

Source: UNECE Statistical Division Database, compiled from national and international (Eurostat, United Nations Statistics Division Demographic Yearbook, World Health Organization European health for all database and UNICEF TransMONEE) official sources; National Statistics of Georgia http://www.geostat.ge; National Statistical Committee of Kyrgyzstan http://www.stat.kg.

Table 2. Total fertility rate by country and year in selected CIS countries

Country	1980	1990	2000	2008
Armenia	2.3	2.6	1.3	1.4
Azerbaijan	3.3	2.8	2.0	2.3
Belarus	2.0	1.9	1.3	1.4
Georgia	2.3	2.2	1.5	1.7
Kazakhstan	2.9	2.8	1.8	2.7
Kyrgyzstan	4.1	3.6	2.4	2.8
Moldova, Republic of	2.4	2.4	1.3	1.3
Russian Federation	1.9	1.9	1.2	..
Tajikistan	5.7	5.1	3.5	..
Turkmenistan	4.9	3.5	2.9	..
Ukraine	2.1	1.8	1.1	1.5
Uzbekistan	..	4.1	2.6	2.6

Source: UNECE Statistical Division Database, compiled from national and international (Eurostat, United Nations Statistics Division Demographic Yearbook, World Health Organization European health for all database and UNICEF TransMONEE) official sources.

With the exception of the above-mentioned Central Asian countries, populations are declining in other countries in the subregion, owing to migration, particularly from the Caucasus and Moldova, falling birth rates and decreased life expectancy. Studies have indicated that the working-age population in the Russian Federation may drop by as much as 18 million (or 20 per cent) by 2030 from the current 90 million. Such a decline would adversely affect the socio-economic development of the country without considerable in-migration (Zayonchkovskaya, 2010).

Migration flows from Armenia peaked in the mid-1990s, and remained high until 2003 when the flows decreased and stabilized. According to independent analysts, the number of labour migrants has reached

Table 3. Life expectancy at birth and at age 65 by country, sex and year

			1980	1990	2000	2008
Armenia	At birth	Female	75.8	75.4	75.8	76.7
		Male	69.6	68.6	70.1	70.2
Azerbaijan	At birth	Female	72.2	74.8	75.1	76.3
		Male	64.5	67.0	68.6	71.1
Belarus	At birth	Female	75.7	75.6	74.7	76.5
		Male	65.9	66.3	63.4	64.7
Georgia	At birth	Female	..	76.6	74.9	79.0
		Male	..	69.0	67.5	69.3
Kazakhstan	At birth	Female	..	73.4	71.6	72.5
		Male	..	63.9	60.2	61.9
Kyrgyzstan	At birth	Female	70.1	73.0	72.0	..
		Male	61.2	64.4	63.8	64.6
Moldova	At birth	Female	68.8	72.0	71.4	73.3
		Male	62.4	65.0	64.0	65.5
Russian Federation	At birth	Female	73.0	74.4	72.4	..
		Male	61.4	63.8	59.2	..
Tajikistan	At birth	Female	..	72.6	70.3	74.8
		Male	..	67.1	66.1	69.7
Turkmenistan	At birth	Female	..	69.7	71.8	..
		Male	..	62.9	64.9	..
Ukraine	At birth	Female	74.0	75.0	73.6	73.9
		Male	64.6	65.7	62.3	62.3
Uzbekistan	At birth	Female	70.4	72.4	73.2	..
		Male	63.6	66.1	68.4	..

Source: UNECE Statistical Division Database, compiled from national and international (WHO European health for all database, Eurostat and UNICEF TransMONEE) official sources.

147,000 in recent years, representing about 4.6 per cent of the 3.5 million population; ninety per cent of migrants have moved to other CIS countries, mainly to the Russian Federation. Other destination points have been countries of Europe and the United States of America. Altogether, between 1988 and 2003, estimates coming from different sources showed that the number of people who migrated from Armenia ranged from 800,000 to 1.5 million[1]. Among those migrants, over 82 per cent left in search of jobs, the rest migrated to reunite with their families (Panfilova, 2008).

Official sources estimate that from 400,000 to 500,000 Azerbaijan citizens reside in the Russian Federation[2]. However, independent analysts estimate that this figure might be as high as 2.5 million, with 700,000 of them having already received Russian citizenship. Estimates suggest that 10 to 15 per cent of the population of Azerbaijan is engaged in seasonal labour migration. It is worth noting, however, that strong economic growth during the past few years has been a pull factor for in-migration to Azerbaijan. The National Statistical Agency of Azerbaijan estimates that more than 11,000 foreigners are registered in the country. Many are specialists and representatives of various corporations, working primarily in the oil and construction sectors. It is likely that Azerbaijan will receive an even greater inflow of foreign labour in the future.

According to various sources, between 600,000 and 1,020,000 labour migrants from Kyrgyzstan, or 11 to 20 per cent of the total population, are working abroad. However, it is not clear if this number includes so called "shuttle traders" (people who shuttle back and forth to buy and sell goods). Of these migrants, up to 400,000 are estimated to be working in the Russian Federation and about 55,000 in Kazakhstan (Kyrgyzstan, 2010). The Russian Federation is thus a major destination for labour migrants from Kyrgyzstan, one of the countries in North and Central Asia that has an advanced institutional framework in the area of external migration and among the first in the subregion to adopt a law regulating labour migration (2006). One of the law's objectives is to prevent illegal migration. The export of human resources is seen as a means to reduce unemployment and tension within the country, and to alleviate poverty through remittances. But despite the efforts undertaken by the authorities of Kyrgyzstan to regulate labour migration and protect the rights of migrant workers, the majority of the country's migrants do not go through official channels.

Labour migration in Tajikistan has become an important instrument in social and economic development and accelerating the recovery since the civil war[3]. The percentage of migrants among the adult population is estimated to range between 21.8 and 54 per cent. Between 600,000 and nearly one million people are estimated to leave the country each year to work abroad. The actual figures are hard to estimate due to the temporary or seasonal nature of this phenomenon. Most Tajik migrants are males and the majority (more than 93 per cent) migrate to the Russian Federation, while nearly 5 per cent migrate to Kazakhstan, Ukraine, Republic of Korea and the United States (ILO, 2010). Tajikistan has adopted progressive national legislation on migration and has ratified several related international legislative instruments. Specific policies directed at preventing irregular migration have been in place in the country since 1998, and institutions have been designated with the responsibility to implement these policies.[4] However, the majority of migrants continue to migrate through informal channels. A significant portion of migrants are low-skilled workers who have little or no awareness of their rights and a lack of Russian language skills.

In recent years, Uzbekistan has emerged as the leading country in labour migration in the subregion, surpassing Tajikistan. According to official sources, the number of migrants varies between 300,000 and 400,000, but independent analysts estimate the number to be much larger, possibly between 2 and 7 million people. As is the case with other sending countries in the subregion, many migrants are engaged in seasonal work and tend to bypass regular channels of migration, which exposes them to various risks and vulnerabilities at destination points. This practice also prevents an accurate census of migrants. The Republican Agency for Labour Migration under the Ministry of Labour is entrusted with the task of facilitating external labour migration, but the information on how many Uzbek citizens work officially abroad is not easily accessible, even for destinations such as the Republic of Korea and the United Arab Emirates with whom Uzbekistan has signed intergovernmental agreements. The bulk of workers from Uzbekistan migrate to the Russian Federation and Kazakhstan, countries where no visa is required for Uzbek citizens, and no language barriers exist.

Drivers of migration

As indicated in the above paragraphs, countries in North and Central Asia, with the exception of Kazakhstan and Turkmenistan, are mostly countries of origin for migrants. With the exception of Armenia, the population of these countries is expanding to an extent that they are unable to assimilate young adults entering the labour markets, and consequently out-migration has become an important tool in addressing socio-economic issues and reducing social tensions.

Contrary to countries of origin for migrants (Kyrgyzstan, Tajikistan and Uzbekistan), countries of destination in the subregion are facing negative population growth due to low fertility and high mortality rates. The latter trend mostly affects males, who, on average, die 10-12 years earlier than females in the Russian Federation, Ukraine, Belarus, Georgia and

Kazakhstan. Epidemiological trends, such as high incidence of HIV/AIDS and virulent strains of tuberculosis, high alcohol and drug consumption, high male suicide rates (for instance, in Ukraine, according to official statistics, 80 per cent of suicide victims are males) are among other factors that contribute to this phenomenon.

There are no reliable data sources which would allow a more or less accurate picture on the scale of labour migration in the Russian Federation. According to the Federal Migration Service (FMS) of Russia, there are five to seven million migrant workers in the Russian Federation (Romodanovsky, 2010). Migrants in the Russian Federation come from a wide variety of countries, including China, Viet Nam and Afghanistan, but the majority of migrants are citizens of Tajikistan (0.8 million), Ukraine (1.5 million) and Uzbekistan (1.2 million) (Romodanovsky, 2010). Independent estimates on the number of regular and irregular migrant workers from other CIS countries working in the Russian Federation vary considerably in the range of between 6 and 10 million. Of note, the Russian Federation has become one of the largest remittance-sending countries in the world, recording transfers worth $11.4 billion in 2006 (Marat, 2009).

The Russian Federation is not the sole country of destination in the region however. Estimates on the number of migrant workers in Kazakhstan also vary between 250,000 and 1 million. Precise figures are difficult to assess due to the high number of workers from bordering countries engaged in seasonal agricultural work. Most of the migrants come from Kyrgyzstan and Uzbekistan.

The main push factors for migration in the countries of Central Asia are economic: unemployment, low wages, lack of opportunities to be engaged in productive activities and poor business environments. In surveys conducted at the local level in different countries, migrants indicated that the main reasons prompting them to migrate were: (a) the desire to improve their overall economic well-being; (b) to earn money to pay for the basic household expenses (food, clothes, utilities, household appliances) and/or make home improvements; (c) to receive education and healthcare; and (d) to repay debts. Very few people migrate with a specific intention of earning money to invest in a future business (such as purchasing land, agricultural equipment, means of transportation or livestock), although savings and investments become an option for migrants with a longer duration of stay.

While the main reasons for migration are economic, the main destination countries for migrants are the Russian Federation and Kazakhstan, which could be explained, among other things, by an absence of visa requirements, no language barriers, familiar environment and cultural similarities because of a common past as well as extensive social networks across borders.

There are also pull factors that stimulate labour migration. Both the Russian Federation and Kazakhstan have been experiencing rapid economic growth since the second half of the 1990s, which resulted in higher salaries in these countries in comparison with the migrants' countries of origin. Robust economic growth has also boosted demand and opened the markets for a number of low-qualified, low-skill jobs.

Although the majority of migrants from CIS countries working in the Russian Federation and Kazakhstan leave their country legally, many end up residing and working at their place of destination as irregular migrants. According to FMS, five million foreign citizens reside in the Russian Federation, of which only one million are officially registered, while the remaining are irregular migrants from one of CIS countries working in the shadow economy (Romodanovsky, 2010). There are a number of reasons as to why migrants resort to irregular channels to work. For example, some experts point out to an unwillingness of employers to grant a regular status to migrants to avoid incurring additional costs. This means that employers may have a vested interest in keeping some of the people off their books. Other reasons may be related to the difficulties in migrants' registration procedures and in obtaining work permits to hold a specific job. Although Kazakhstan and the Russian Federation have a visa-free regime with Kyrgyzstan, Tajikistan and Uzbekistan, all CIS citizens have to register on arrival. Depending on bilateral agreements, temporary registration can be valid from 30 to 90 days. A temporary registration card does not grant the right to employment, and the process of getting work permits can be cumbersome.

The issue of legality of migration has profound effects on the status of migrants and their vulnerability to the risks related to forced labour, slavery and human trafficking as well as on remittance flows, their beneficiaries and the economy as a whole. Irregular migrants are in a more vulnerable position than regular migrants. They end up receiving lower wages and are exposed to intimidation and exploitation. Workers in the informal economy, who are predominately migrants, tend to be among the most vulnerable social groups in the subregion and are more likely to fall prey to forced labour and human trafficking. Research conducted in recent years indicates that the extent of forced labour and human trafficking within the CIS subregion is many times greater than that of trafficking of CIS citizens outside the subregion (Baskakova, Tiurukanova & Abdurazakova, 2005).

Migrant composition and experience

Profiles of migrants from Azerbaijan, Armenia, Kyrgyzstan, Tajikistan and Uzbekistan share some commonalities. For instance, in these countries, migration is undertaken predominantly by males. Research conducted in Tajikistan indicates that 93.5 per cent of the migrants are males (Khakimov & Mahmadbekhov, 2009).

Migrants from Central Asia are typically young and mostly come from rural areas. The same research conducted in Tajikistan found that more than half of labour migrants are aged between 18 and 35 years, with about 24 per cent under the age of 25 (Khakimov & Mahmadbekhov, 2009). The percentage of married males among labour migrants from Tajikistan is 68 per cent. Among female labour migrants, the number of divorcees is three times as high as that of male migrants (Khakimov & Mahmadbekhov, 2009).

Migration may also be seasonal. Labour migrants usually leave home during spring and return at the start of winter. This type of migration from Central Asia has a mainly temporary character, usually lasting for a period of several months. According to a recent study conducted in Tajikistan, up to 34 per cent of labour migrants are seasonal and temporary migrants who go abroad for several months a year (ILO, 2010).

Women are estimated to comprise between 10 and 30 per cent of the labour migrants in the subregion (International Crisis Group, 2010). Their share is relatively low due to traditions entrenched in the patriarchal societies of Central Asia, in which families typically offer less freedom to women. Most women's travel is reserved for short business trips, such as "shuttle trading". In general, females tend to work in the informal sector, and therefore are statistically undercounted. In addition, their involvement in activities such as sex work, which is considered criminal, further compounds this issue of underrepresentation in official statistics. If females migrate for longer periods, they usually take up low-skilled work in the domestic sector, such as housemaids and child and elderly care workers, or in the service industry as waitresses or shop assistants. Due to this gendered division of labour, females earn on average 20 to 25 per cent less than males (Abdullayev, 2008).

The educational level of labour migrants from the subregion is relatively low compared to the end of the 1980s-1990s when the "brain-drain" was more prevalent. Under the current profile, most labour migrants graduated from secondary (high) school, some had vocational training, but few had received higher (college) education. For instance, one study in Tajikistan shows that only 73 per cent of labour migrants have a high school education. Due to low educational levels, labour migrants mostly work in low-paid jobs that require minimum skills (up to 52 per cent). Approximately 16 per cent work in construction, in which only 7.3 per cent have higher professional qualifications. The remaining labour migrants are employed in the service sector (26 per cent) (Khakimov & Mahmadbekov, 2009).

Most migrants find work through informal networks of friends and relatives. In the construction business in the Russian Federation, more experienced migrants often assemble their crews with people brought from their home neighborhoods and villages and secure jobs are based on migrants' previous contacts within their country of origin. Migrants in the Russian Federation work predominantly in construction, perform manual labour and work at enormous open air markets that can still be found in most cities. In Kazakhstan, each migrant community is known to occupy its niche with Uzbek migrants bringing their families to work in cotton fields and Kyrgyz migrants engaged mostly in retail trade or picking tobacco.

For an average monthly salary, migrants in Russia usually work 60 hours per week, or twenty hours more than the locals, and a third of migrants work 70 hours and more, or ten hours per day seven days a week (UNDP, 2008). There is also evidence of workers being exploited and ultimately not paid at all (Baskakova, Tiurukanova & Abdurazakova, 2005).

The informal or 'shadow' ('grey') economy in the Russian Federation is estimated at 20 to 25 per cent of GDP. The "shadow" share in sectors employing migrants (construction, trade, services) is much higher - up to 60 per cent of the sectoral GDP (UNDP, 2008). In CIS countries, 10 to 50 per cent of the labour force is employed in the informal economy (Baskakova, Tiurukanova & Abdurazakova, 2005). According to a survey undertaken by the International Organization for Migration (IOM) in the Russian Federation in 2006, about half of all legal migrants (those having registration, a work permit and other required documents) and nearly all illegal migrants are employed in the shadow sector of the economy where workers have little or no protection, employers pay no taxes, can hire and fire migrant workers at will, and often withhold migrants' salaries and keep their passports until the work is completed (UNDP, 2008).

This means that even full legal status neither guarantees a migrant a job in the official economy nor ensures that migrant's rights are adequately protected. Working in shadow and informal sectors, or even working in the formal sector of the economy still presents a social risk for migrants. The risk lies not only in the possibility that a migrant could be forcibly subjected to exploitation, but also in the likelihood that the worker would be pushed into accepting working conditions incompatible with basic human rights in order to survive or get ahead. This "consent to exploitation" plays a special role in models of risk behaviour. For example, migrants from Central Asian countries coming to the Russian Federation in search of jobs often face dire economic circumstances at home. The average per capita income in Tajikistan, for example, in 2000 was $0.2 per day, and although over the past decade it increased to $1.64. Tajikistan remains among the countries with the lowest per capita income in the world. The median monthly income of labour migrants from Tajikistan in 2007-2008 was around 400 US dollars, which was 12 times more than their incomes at home (Khakimov and Mahmadbekov, 2009).

Addressing social impact and embracing the poverty reduction potential of remittances

Over the past decade, both the Russian Federation and Kazakhstan have set up institutions at the state and public levels to deal with issues related to labour migration. While it is beyond the scope of this article to discuss country-level institutional details, it is worth noting some of the remarkable changes in this area that signal the emergence of civil society organizations. Examples of such institutions include, among others the Centre to Support Women (both in the Russian Federation and Kazakhstan) and other non-governmental organizations that aim to help migrant workers by providing legal and psychological consultations and medical and social services. Such organizations also monitor the working conditions of migrants in various parts of both countries. The Centre to Support Labour Migrants, along with four similar centres opened in Kazakhstan, was inaugurated in Almaty in 2008. The objective of these centres is to protect the rights and interests of migrants.

Similar organizations have emerged over recent years in other CIS countries, such as Kyrgyzstan and Tajikistan, with an objective to support labour migrants and get them prepared for working abroad. Thus, social migrant infrastructure development in the subregion is represented by state agencies in charge of migration and civil society organizations, including NGOs and international organizations functioning in both countries of origin and countries of destination.

Scale of remittances

For the purpose of this study remittances are understood as monetary and cash flows coming from abroad. Transfers, made by both regular and irregular migrants through formal and informal channels from the host country to the country of origin, are part of the overall remittances that also include business transfers, as well as financial help sent by citizens and residents of host countries to their relatives in the countries of origin.

Remittances serve as a vital source of income for migrants and their families, and play a significant role in sustaining national and local economies of countries with net out-migration, especially with regard to poverty reduction and development. As an important source of external financial flows for the sending economies, remittances increase investment in human and physical capital. They also represent, at least in theory, an engine for growth in the receiving country, stimulating investment, modernization and the restructuring of the economy.

In the CIS economies, financial flows are difficult to monitor, owing to prevailing informal employment. However, evidence suggests that in 2011 there had been a remarkable 11 per cent expansion in the volume of remittances sent home by labour migrants from Russia to Central Asia after a significant slowdown in 2008 due to the global financial crisis (World Bank, 2011).

The economies of Armenia, Kyrgyzstan, Tajikistan and other major countries of origin for migrants are based on financial remittances, or largely depend on them. The total amount of remittances for Armenia grew 23 per cent per annum during 2000-2004, and reached 10 per cent of GDP in 2004. Some independent researchers, especially those that take into account the estimated sums transferred by seasonal workers and through other sources, believe that the real amount of remittances should be at least three times higher than the figures cited in the official reports, or around $1 billion, representing almost 33 per cent of GDP (Roberts and others, 2004). According to the World Bank's latest estimates, Tajikistan (31% of GDP, 2010) is leading the current global list of top remittance recipient developing countries in relation to GDP, with Kyrgyzstan (21% of GDP, 2010) also being in the group of top ten remittance recipient developing countries (World Bank, 2011).

Although specific data on remittance flows are not available for Uzbekistan, only the accounting for the period 2002-2006, the annual influx of official transfers to the country increased five times, and reached, in 2006, almost $1.4 billion or 8.2 per cent of the Gross National Product (GNP) (Centre for Economic Research, 2007). At the same time, outgoing monetary transfers from Uzbekistan did not grow as fast, and increased for the same period only 2.6 times, reporting by the end of 2006 almost $226.7 million, with the balance gap increasing from 2.6 million in 2002 to 6 million in 2006 (Centre for Economic Research, 2007).

As shown in table 4, remittances to Armenia, Azerbaijan and Kyrgyzstan grew at a rapid rate between 2006 and 2008, before declining abruptly in 2009 as a result of the global financial crisis, which severely hit the Russian Federation. However, according to the World Bank's latest *Migration and Remittances Factbook 2011* estimates based on data compiled from various sources, external financing flows have since then demonstrated a tendency to increase. According to data from the Central Bank of Russia, in the second quarter of 2011, residents and non-residents transferred almost 1,069 million US dollars to Uzbekistan, compared with $2,858 million transferred in 2010 (see Table 5). Even though the figure does not cover all transfers, especially those made through informal channels, it makes Uzbekistan a leading CIS receiver of monetary transfers from the Russian Federation.

Table 4. Remittances by country and by year

Country	Remittances					
	As a share of GDP(2010)	2006 ($) (million)	2008 ($) (million)	2009 ($) (million)	2010 ($) (million)	2011e.
Armenia	8.8 per cent	658	1 062 000	769	996	1 147 000
Azerbaijan	2.5 per cent	813	1 554 000	1 274 000	1 432 000	1 823 000
Kyrgyzstan	20.8 per cent	481	1 200 000	882	1 275 000	1 500 000
Tajikistan	31.0 per cent	1 019 000	2 544 000	1 748 000	2 254 000	2 680 000
Uzbekistan	..	..	..	..	..	..

Source: The World Bank (2011).

Table 5. Remittances from the Russian Federation in 2010

Country	Remittances (million)	Average amount for one transaction (in USD)
Armenia	1 108	647
Azerbaijan	881	677
Belarus	212	362
Kazakhstan	308	634
Kyrgyzstan	1 128	371
Moldova	862	525
Tajikistan	2 229	384
Turkmenistan	35	545
Ukraine	2,201	576
Uzbekistan	2 858	581
Total amount transferred to the CIS from the Russian Federation	11,823,000	
China	3,672,000	9, 852

Source: The Central Bank of Russia, www.cbr.ru [Accessed 4 December 2011]

The potential of remittances for poverty alleviation

Remittances provide a flexible, responsive and well-targeted support mechanism for the households of North and Central Asia. The situation in Tajikistan serves as an example of this. According to the latest study conducted by ILO, more than 80 per cent of Tajik families are the recipients of regular remittances from their family members working abroad. For more than 60 per cent of these families, remittances represent more than 50 per cent of their income; to 31 per cent of families, remittances make 100 per cent of their income, and for 35 per cent – less than 50 per cent. Thus, the number of families heavily dependant on remittance flow is nearly twice as large as the number of families that only partially depend on remittance flows (ILO, 2010). In Armenia, remittances benefit nearly 40 percent of its population and represent about two-thirds of all income earned in the household (Orozco 2008).

Most remittances are transferred in cash using both formal and informal channels. Statistical authorities do not regularly monitor returning temporary migrants and the accumulated savings they hand-carry with them. This rule exists in countries where the majority of migrants are involved in temporary and circular migration. A positive development observed during recent years is the increased use of official channels (banks and other financial institutions such as Western Union) in remittance transfers. For instance, a study supported by the ILO noted that up to 87 per cent of Tajik migrants now transfer their earnings through official channels, and only 12 per cent still rely on friends and acquaintances (ILO, 2010).

Remittances are transferred through informal channels when financial and taxation policies are generally perceived as negative. For example, Uzbek migrants usually avoid transferring funds through official bank accounts due to a difference in the 'black market' and official conversion rates, difficulties in cashing money in the banks of their home country and, probably, other reasons as well (Centre for Economic Research, 2007). Consequently, remittance flows are significantly underestimated and their full potential in terms of providing financial benefits in the form of investment pools and retained savings is not realized.

As noted above, one of the characteristics of the subregion is that many migrant workers enter host countries legally but tend to remain in them as irregular workers. In such cases, they are more likely to perform low-paid casual jobs, and are not gainfully employed for long periods. In addition, irregular work makes migrants vulnerable to abusive practices. Due to a lack of appropriate documents, they are often less able to establish a bank account in the host country. Irregular migrants, therefore, may face additional costs and risks that migrants with legal status do not have, and thus, consequently, markedly reduce their ability to gain income and remit money.

Use of remittances

Information and data on the actual use of labour migrants' remittances are limited. The money is generally first allocated to pay off debts (often related to the cost of migration itself) and an extended family's basic needs, with expenditures mainly covering day to day expenses and leaving little for long term asset building.

The surplus is spent mostly on durable goods, such as cars, electronics, housing (to purchase or build a new house or upgrade an existing accommodation), and traditional family rituals, such as weddings, funerals and other events (especially in Uzbekistan and Tajikistan). Furthermore, it is difficult to assess the amount of remittances that supplement the seriously underfunded health and education systems, how much of it is saved and how much is invested into productive assets.

Remittance patterns are similar among net out-migration countries in Central Asia. However some variations exist. While in Central Asia remittances are spent primarily on consumption, investing in business activity, including trading, machinery and retail is relatively common in Armenia. More strategic use of remittances and their investment in micro, small and medium level business enterprises in home countries are the areas that policymakers need to encourage in migrant countries of origin.

There seems to be a consensus among various stakeholders that remittances positively influence the living standards of households in counties of origin. As a result of the active advocacy and lobbying from civil society organizations, policymakers have a clearer understanding of what potential remittances can do for the economy. This is manifested in policy decisions, such as the adoption of legislative acts and national strategies and programmes (for instance, in Kyrgyzstan and Tajikistan) aimed at increasing the positive impact of labour migration on economic development through improved financial services made available to citizens on both sides of the border, as well as other related acts and services.

Key social issues related to labour migration

There are many positive aspects of migration including reduction in household poverty and improvement in the quality of life. Remittances sent by migrants home for consumption purposes contribute to household income and enable households to address poverty issues. However, there is a need to be aware of the social impact of migration and given the increasingly proportion of women and girls in migration channels, the gender dimensions of migration. Finally this section will look at the impacts on vulnerable populations remaining 'at home', namely women, children, and older persons, as well as those vulnerable to trafficking.

Feminization of migration

Greater involvement of women has become one of the important characteristics of international migration. Surveys signal that more women are migrating from Central Asia to the Russian Federation than ever before. Indeed, 'growing numbers of women migrating independently represent a new feature in the regional migration process' (Abdullaev, 2008:142). However, the percentage of female migrants is far lower than elsewhere and the feminization of migration is slower than in other subregions (such as Moldova and Ukraine). The "feminization of migration" is a term used to describe the change in migration patterns, wherein women are increasingly moving as independent migrants in search of jobs rather than "dependent spouses" joining male family members. The push factors for females to leave their homes in many cases are similar to that of males, as migration may be the only option in the face of poverty, or the best option for personal or family betterment. There are also gender-specific reasons for migration, for instance, women migrating to escape violent relationships.

International data suggest that migration may benefit and even empower women by providing them with economic independence, confidence and greater freedom. Migration can provide a vital source of income for migrant women and their families, and earn them greater autonomy, self-confidence and social status, changing the balance of power between men and women. However, it may also lead to their further marginalization, especially when labour markets in host locations are gender-segregated and offer different opportunities to different sexes (Jolly and Reeves, 2005).

Female migrant workers are often at a disadvantage when compared to males at all stages of the migration process because of a difference in status, the nature of employment, educational requirements, as well as stereotypes in the roles of men and women. All this makes women particularly vulnerable to discrimination, violence and exploitation and, in the worst cases, human trafficking. Studies also point to the vulnerability of men coming from rural areas, and the increased issue of human trafficking in the subregion in past decades affecting women, men and children.

Significant economic and social changes during the past twenty years in the CIS has contributed to the growth of inequality, with rural residents, the elderly and women being among the most marginalized. Traditional patriarchal values have returned, eroding the commitment of the former communist regime to 'zhenskiy vopros' ('women's issues'). Although the Gender Development Index (GDI) calculated on the basis of literacy rates, average per capita income and life expectancy remains relatively high for most of the countries in the subregion, it does not reflect the prevailing stereotyped views towards women and their rights that have become widespread, as well as the deterioration of indicators related to economic participation and opportunities and political empowerment (World Economic Forum, 2011).

The effect of transition from a centrally planned to a market economy and the new reforms in the subregion have left many women unemployed or seeking alternative forms of employment often below their former status and qualifications (UNICEF, 1999, Paci, 2002). Many women have been relegated from the public sphere to staying at home where their work is not recognized in the formal employment statistics. Females typically earn 70 per cent or less than males in the subregion.[5]

Women have also largely missed out on the growth of the private sector during which men gained in terms of entrepreneurship, property ownership and access to credit. Women's entrepreneurship tends to be confined to small and micro businesses, utilizing the skills similar to those used at home with little use of technology, and in economic sectors where there is limited opportunity for further expansion. In the labour markets of the post-Soviet States professional segregation is common and women tend to concentrate in "feminized" sectors of economy (education, healthcare and other usually low-paid sectors). Even in the sectors where women are better represented, it does not translate into an access to decision-making and well-paid jobs. Women, especially at pension age, are most vulnerable to poverty.

A significant number of women migrant workers, despite having obtained a high level of education in their countries of origin, tend to be channelled into low-paid feminized sectors of labour markets, mainly in domestic and healthcare services. Women engaged in domestic services and the informal economy are the ones most at risk of rights violation and of being excluded from labour legislation. Indicators of migrant women's labour market point to its marginalization. Female migrant workers hold low-status jobs, work under poor conditions, receive low wages, and have no protection or any form of social insurance. Migrants are often exploited not only because they are migrants, but also for other reasons – for example, because they are women, or are young, or old, or ethnic minorities, or domestic workers, or sex workers, or have been trafficked.

Impact on those left behind

Women

Studies have found that rural households, receiving remittances from one or more members working overseas, benefit economically but must deal with a range of social problems associated with labour migration. These problems affect local communities as a whole, but have a particular impact on women. As marriages in Central Asia are patrilocal, many wives are left with their husband's parents who usually have control over remittances (Khakimov and Mahmadbekov, 2009). Women left back home usually face an increased burden of caring for children, the sick and the elderly. When remittances arrive irregularly or are spaced within longer periods of time, women are obliged to find means to support their families. Irregular remittances often put families at a greater risk of poverty, as women's ability to become self-employed may be constrained by traditional values held in their societies. In addition, the increased pressure and emotional costs associated with the underlying fears that the migrant may not return as well as weaker family links when family members live apart for extended periods, are often cited as the most common impacts of labour migration on women left back home.

The problem of migration is compounded by the reality that those who migrate are among the most economically active, leaving elderly and young persons behind. Labour migration may also have implications for development opportunities and the social fabric of rural communities. Emerging sex imbalances in communities, affected by high rates of male labour migration, may result in fewer opportunities to form families for younger generations of women in Central Asia.

Indeed, family members at home may become dependent on remittances and reduce their own efforts at productive employment. Female-headed households often struggle to survive in the absence of the main breadwinner and, if the remittances cease, their situation could become desperate. Some long-term male migrants start parallel families in their country of destination, gradually decreasing remittances to their families at home (International Crisis Group, 2010). A recent trend in Tajikistan is divorces agreed to by phone or through text messages - *talloq* (divorce) told/written three times is believed to annul a marriage according to Shari'at (Islamic religious law). Over the past few years, this has become so widespread that Tajik human rights groups have started to pressure authorities to outlaw the practice (International Crisis Group, 2010).

Children

Families with many children in North and Central Asia, especially rural areas, bear the highest incidence of poverty (Baskakova, Tiurukanova & Abdurazakova, 2005; UNICEF, 1999). Children of migrants may be financially more secure if one or both of their parents work abroad, and some of these children may even benefit from access to higher education, but, on the other hand, they may also suffer from lack of parental care or guidance when left under the care of their grandparents or other relatives (Help Age International Central Asia, 2008). Studies indicate that children raised in migrant families do not attend classes regularly, do not have adequate access to medical services, do not properly use the remittances they receive and they are often completely withdrawn from school and forced to work at home or on a farm. Such children are also more likely to get into trouble, becoming the objects of various forms of exploitation such as prostitution and pornography, or turning into beggars and criminals, and are at a greater risk of becoming the next generation of victims of human trafficking.

Older persons

The limited research on the effects of migration on older persons in the subregion found that the elderly tend to play a strong role in supporting and facilitating migration for young and middle-age family members. 'The elderly' usually don't migrate but often serve as surrogate parents and/or heads of multi-family households, particularly when younger male members migrate, leaving the wives and children behind, and, as noted earlier, become the main decision-makers with regard to control and use of remittances.

In highly traditional societies of North and Central Asia, large extended families in which three generations live together, are still common. This is especially true in rural areas. In urban areas, where grown-up children do not share the same household with their parents, they still take care of them financially. During the post-Soviet transformation, when the pensions' size and purchasing power significantly dropped and the quality of social services, provided by the State, deteriorated, older persons have become highly dependent on the income and support provided by their working sons (and increasingly daughters). From this perspective, older persons are particularly vulnerable to isolation when their children migrate, suffering from emotional pressures and deteriorating physical and mental health.

Human trafficking

Human trafficking and slavery are relatively new phenomena in the subregion. However, the social and policy responses to critical issues associated with migration have changed over the past decade from total unawareness to increased recognition. The profile of human trafficking in the subregion has distinct differences from other parts of the world. For example, male trafficking for forced labour and slavery is believed to be more common within the subregion than female trafficking for the sex industry (Baskakova, Tiurukanova & Abdurazakova, 2005). Men are usually recruited through an agency and travel to work in organized groups. They are engaged in hard manual labour in agriculture and construction and work in extreme conditions for two to three months, including winter months, with a promise of payment at the end of the contract or season. In some cases, their documents are confiscated by their employers and there is often no opportunity to contact home. Finally, and often with the collusion of local authorities, they are forcibly repatriated or formally deported, without receiving their full wages.

Female victims of human trafficking are generally young, come from poor urban or rural areas and are desperate to escape poor living conditions. Most are trafficked for the sex industry and many may know that (but may not be aware of the exploitative conditions they will face). Often these women are recruited through a neighbour, friend or acquaintance (who is linked to an employer or trafficker abroad) or a foreign tour operator, who is allegedly recruiting for jobs abroad. Reportedly, traders make up to $30,000 or more on a sale and resale of such women. The main destinations are United Arab Emirates (solely for the sex industry) and Turkey (for sex and forced labour), although trafficking within the subregion is also common.

The main drivers of human trafficking in the subregion are economic - a search for a rapid improvement in migrants' well-being. Gender-based discrimination and family violence also appear among causes of such phenomenon. Groups at risk include young women, divorced or widowed, often caring for children and older members of their families, and those suffering from social and mental problems, such as substance abuse or domestic violence. Unlike elsewhere in the world, trafficking in the subregion involves a high percentage of women who have completed higher levels of education. Reportedly, there are cases of trafficking minors for the sex industry. Those living without parents or coming from vulnerable families or orphanages are at a greater risk (Baskakova, Tiurukanova and Abdurazakova, 2005). As in the case with data on migration, there is no specific data on child trafficking from families of migrants that could help provide a more complete picture of the phenomenon.

Conclusion and recommendations

Despite the continuing economic crisis and the subsequent decline of remittances, labour migration flows are expected to continue over the long-term and remain strong social and economic development factors both for the countries of origin of migrants in Central Asia, and the recipient countries. Even if Central Asian countries succeed in boosting domestic employment, the Russian Federation's medium- to long-term need for migrants will remain acute. The National Statistical Office of Russia predicts that the population of the Russian Federation will decline by 11 million between 2008 and 2025 (Russian Federation Federal State Statistics Office, 2009). This has major implications for the country's labour force. Starting from 2006, the numbers of economically active working-age Russians have been shrinking, and the process, according to the experts' forecasts, will intensify over the coming decades.

According to the Ministry of Economic Development of the Russian Federation, the number of working people will decrease from 67.9 to 64.6 million between 2011 and 2020, resulting in a significant deficit in the labour market (Ministry of Economic Development, 2011). According to independent experts, the numbers of working-age Russians will shrink even faster – by approximately one million every year between 2011 and 2017, which will require even larger numbers of foreign workers, or new citizens, in the years to come in order to sustain the country's economic development (UNDP, 2008). Taking into consideration this perspective, labour migration will continue to be one of the key policy issues and priorities facing the subregion. The challenge however remains in how to better utilize migration's potential for the positive development of people, communities and countries across Central Asia.

The following recommendations should be considered by policymakers to reduce the negative impact of migration and increase remittances in both the sending and recipient countries:

First, governments should recognize that migration cannot be addressed by restrictive measures only; migration is an important factor in economic development and social stability. Governments should therefore engage more actively in a constructive dialogue at the subregional level, which should result in coordinated and concerted measures aimed at reducing irregular migration and its negative effects such as forced labour and human trafficking.

Second, gender-sensitive policies could significantly improve the living and working conditions of female migrant workers. To achieve this, it is necessary to educate, raise awareness and train officials from various agencies dealing with labour migration in issues relating to gender and women's rights and promote collaboration between different agencies. It is also critical to build technical expertise in incorporating gender concerns into migration policies and practices. For this to happen, sex-disaggregated data on migration to support the decision-making process should be collected and made available. Monitoring and evaluating practices should be conducted using gender perspective. Policies and practices should be examined to integrate gender impact assessments.

Third, governments, civil society actors and international organizations should facilitate migration by undertaking specific measures to address the needs of migrants. The measures should include developing, adopting, enforcing and implementing specific policies and programmes targeting migrant workers both in countries of origin and destination. Among other things, such measures should offer educational programmes which help migrants become familiar with the culture at destination points, teach them language skills and support the establishment of centres at destination points where migrants can receive legal consultation, medical help, psychological advice and other assistance.

Finally, greater effort should be given to social protection measures. Services such as easily accessible legal consultations, medical and psychological advice should also be provided to women and other members of migrant families left behind. Migrant workers should also have access to economic means such as low-interest credit and others. Strategic and sustainable use of remittances should be encouraged by organizing educational programmes for migrants, both female and male, on financial management of their earnings. In countries of destination, advocacy campaigns involving mass media to reduce stereotyping, xenophobia and racism towards migrant workers among the population should be organized.

Endnotes

[1] There are two types of Armenian Diaspora: "old" (those descended from Armenians who left Armenia before the 1980s) or "new" (emigrants who began to leave Armenia starting from 1980s). Overall, the Diaspora is estimated to have involved between 3 and 4.5 million persons. Although accurate statistics are not available, the Armenian Diaspora is believed to be divided between approximately 1.5 million Armenians in the countries of the former Soviet Union with the rest dispersed to other parts of the world (North America, Europe, Middle East, India, etc) (USAID, 2004, p.44).

[2] Citizens of Azerbaijan migrating to Russia should not be included with ethnic Azeri living in different parts of the Russian Federation (as in Dagestan or some other parts of the North Caucasus).

[3] Tajikistan was engulfed in civil war from 1992 until 1997 which pitted supporters of the Government against a loosely organized opposition composed of ethnic and regional groups from the areas Garm and Gorno-Badakhshan.

[4] For instance, in 2006, Ministry of Interior of Tajikistan was tasked with handling migration issues, taking over the role from the Ministry of Labour, which it held since 1992.

[5] This is an average gender pay gap cited in various collections of gender statistics published in the countries of the region on a regular basis.

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Economic Activity in Post Retirement Life in India

The article analyses trends in work participation and working life expectancy in post retirement life of persons aged 60 plus by primary, secondary and tertiary sectors to examine a correlation between longevity and post retirement economic activity in India. It was found that in India the average length of working life at 60 plus is 9.8 years for males and 3.9 years for females. Though the life expectancy at 60 plus for males had increased by 2.9 years over the period 1971-2001, working life expectancy for males had decreased marginally by 0.1 years during the same reference period. On the other hand, with a 4.2 year gain in longevity at age 60 plus among females during 1971-2001, their working life expectancy increased by 2.4 years during the same reference period. Work participation has shifted from the primary to the formal sector, which indicates an increase in productive activity in the post retirement period.

By Preeti Dhillon* and Laishram Ladusingh†

There is a common notion in developing countries that increased longevity leads to more years of economically productive life. This is based on the assumption that one's health condition either improves or at least does not worsen during post retirement and that economic opportunities are available for all. In developing countries, with the fall in mortality and lengthening of life expectancy, numerous questions about the quality of the years lived and work participation at the post retirement age of 60 plus have been raised. This question is also relevant in the Indian context and it is important to know whether Indians are spending longer economically active lives or whether an increasing fraction of life past 60 is spent being economically dependent. This is the hypothesis that this study seeks to validate. The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP, 2002) recommended that national policies on old age should recognize the potential of older persons to contribute to development, abandoning the negative perception of the economic burden of older persons and embracing a positive attitude towards ageing. Healthy ageing is all about economically empowered disability-free post retirement life. A major public health responsibility for most developing countries is to improve the quality of life and prevent or reduce disability, physical and economic dependency of the ageing population.

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Weakening of traditional support systems, lack of personal savings, limited pension coverage or lack of public support for older persons in developing countries all may compel people to continue working past 60. In contrast, people in more developed countries can seek early retirement because of sound social security and savings accrued during their prime working-age years. On the other hand, availability of work in agricultural and allied sectors as well as in various activities in unorganized sectors of less developed countries provide people with work opportunities (Audinarayana, 2001). According to the 2001 census of India, the work participation rate among older persons aged 60 and over is around 40 per cent. More older men than women participate in economic activities and that participation is higher in rural than in urban areas. Most older persons working are engaged in agriculture. Nearly half of older persons are fully dependent on others, while another 20 per cent are partially dependent (Anand et al, 2006). The proportion of older workers to total workforce has increased during the past decade (1991-2001) from 7.3 to 7.9 (from 8.2 to 8.9 for males and from 5.2 to 6.7 for females). The median age of workers in primary, secondary and tertiary sectors are on the rise in India. However, nearly 90 per cent of the total workforce is employed in the unorganized sector with no provision for financial security such as pensions and other post-retirement benefits. The Government of India, in the National Policy for Older Persons (NOAPS, 1999), has reported that 33 per cent of the 60 plus population lives below the poverty line.

From the studies on work participation of the population 60 plus in India, it is difficult to ascertain whether increasing longevity over time has led to post retirement work participation. To find the linkages between increasing longevity and work participation in post retirement age, we have constructed working life expectancies for primary, secondary and tertiary sectors which are discussed below.

Review of literature

A number of efforts have been made to assess working life expectancy. Nurminen and others (2005) have used working life expectancy for Finnish workers in the municipal sector to quantify how long a 45-year-old municipal worker, on average, continues to work. Using 1971 Census data, Krishnan (1977) had calculated the working life expectancy for India by sex and compared it with that of other developing countries. Based on the results, he concluded that Indian males fare better than their Ghanaian and Nigerian counterparts in labour force participation, but female labour force participation in India lags behind that of both Nigeria and Ghana. Shoven and others (2008) examined four possible methods for adjusting the eligibility ages for social security, Medicare and individual retirement accounts in the United States to determine minimum eligibility ages today and in 2050 if adjustments for mortality improvement were taken into account.

Zweifel, and others (1999) on the basis of econometric analysis of health care expenditure data from deceased Swiss individuals in the last eight quarters of life, and of individuals who died from 1983 to 1992, observed that health care expenditure depends on remaining life but not on calendar age, at least beyond 65 plus. Ozcan and others (2005) constructed a model in which individuals make their choice between work and leisure over their lifetime, subject to uncertainty about their age of death. In an environment in which mortality is high, an individual who saved up for retirement would face a high risk of dying before they could enjoy their planned leisure. In this case, the optimal plan is for people to work until they die. As mortality falls, however, it becomes optimal to plan and save for retirement. The authors simulated a model using actual changes in the United States life table over the past century and demonstrated that this "uncertainty effect" of declining mortality would have more than outweighed the "horizon effect" by which rising life expectancy would have led to later retirement. Lee (2000) estimated the expected length of retirement for each labour market cohort in the United States between 1850 and 1990. Since 1850, the expected length of retirement has increased more than six-fold and now represents up to 30 per cent of a male's life after entry into the labour force. The rise in the duration of retirement during the twentieth century is analysed according to the effects of mortality decline as well as decreased age of retirement.

The health status of older persons would affect their participation in the labour force, for example, older persons maintaining good health would have a greater chance of being in the workforce (Ogawa and others, 1994). Otherwise, it may be argued that because of ill health older persons may not be able to participate in economic activities during their old age even under pressing economic conditions (Audinarayana, 2001).

The studies reviewed do not address the main issue of increased longevity and work participation at post retirement age in India. As such, many of the following questions remain unanswered:

- Whether longevity enhances economic activities in post retirement life or whether an increasing fraction of life course is more likely to be spent as economically dependent?
- Is there any difference in working life expectancy in post retirement life by sex and primary, secondary and tertiary sectors of employment?

In this paper an attempt is made to answer the above questions in terms of:

1) Analysing trends in age-specific work participation rates by sex and sectors of employment in India.
2) Analysing trends in working life expectancies and differentials in expected years of working life and length of life at post retirement age, by sex.

Methods and materials

Economic tables from 1971, 1981, 1991, and 2001 censuses have been used to compute the trend in age-specific work participation rates by sex and sectors of employment. Sample Registration Systems, based on the abridged life tables for 1970-1975, 1980-1985, 1989-1993 and 1999-2003 from the Registrar General of India, have been used to construct working life tables. Census data provides information on work participation rates by age group. Age-specific work participation rates by sex were computed for primary, secondary and tertiary sectors separately. The primary sector includes cultivation, agricultural activities, livestock breeding, forestry, fishing, hunting, fruit and vegetable growing and allied activities as well as mining and quarrying. The secondary sector includes manufacturing, processing, construction, servicing and repairs in: (a) household industry; (b) other industries. The tertiary sector includes trade and commerce, transport, storage, communications and others services.

Working life table

A working life table is a multiple decrement life table which considers the net of mortality and work participation. Conventionally, the starting age for a working life table is the minimum legal age for employment say, 15 (or 14, 16), which terminates at the age of 65 (or earlier), the normal retirement age or age eligible for receiving old-age pension. In

India, the average retirement age is 60 though this varies across States. The inputs for creating working life tables are age-specific death rates and age-specific labour participation rates ($_n w_x$) (Phang, 2005). Working life expectancy is the number of years that a person of a given age is expected to be working in the remaining life span based on prevailing age specific work participation and age specific mortality rates (Nurminen, and others, 2005).

The computational procedure of working life tables are described below:

Step 1: From the existing abridged life tables, created by the Registrar General of India from 1970-1975 to 1999-2003, life table l_x column and population $_nL_x$ are taken for the construction of the working life table.

Step 2: Years of working life of a person is obtained as: $_nWL_x = {_nw_x} * {_nL_x}$, where, w_x the age-specific work participation rate.

Step 3: Years a person is expected to live in working status after age x is computed as:

$$_nWT_x = \sum_{t=0} {_nWL_x}$$

Step 4: The working life expectancy is then calculated from the following formula:

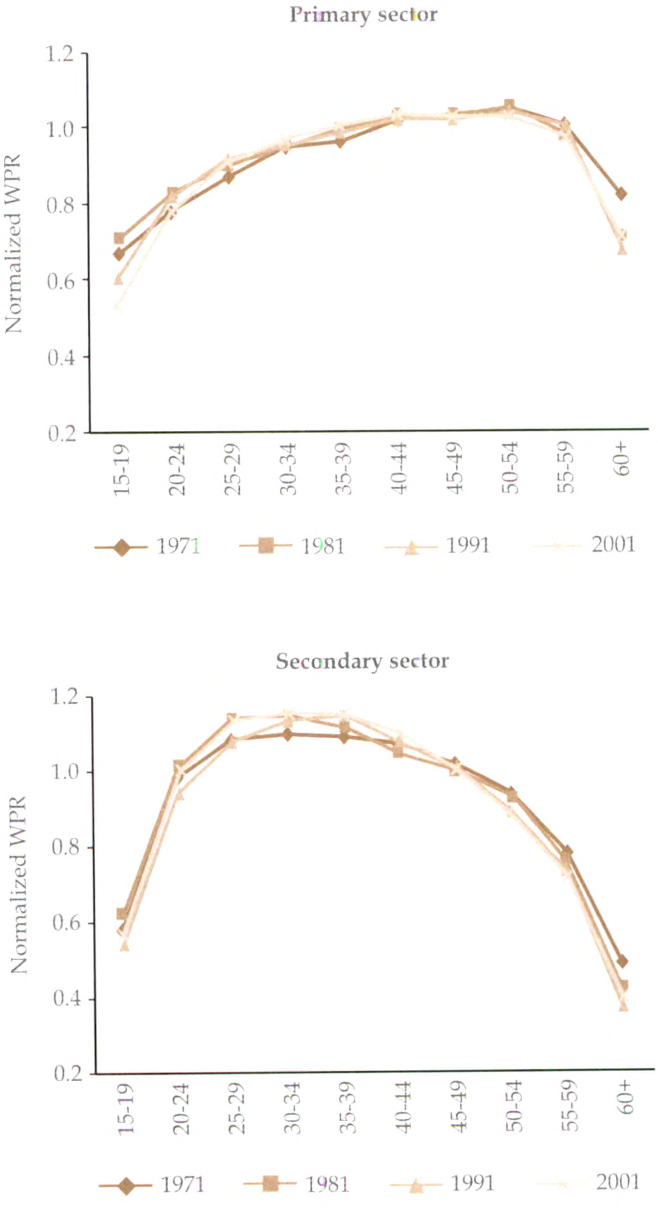
$$We_x = {_nWT_x}/l_x$$

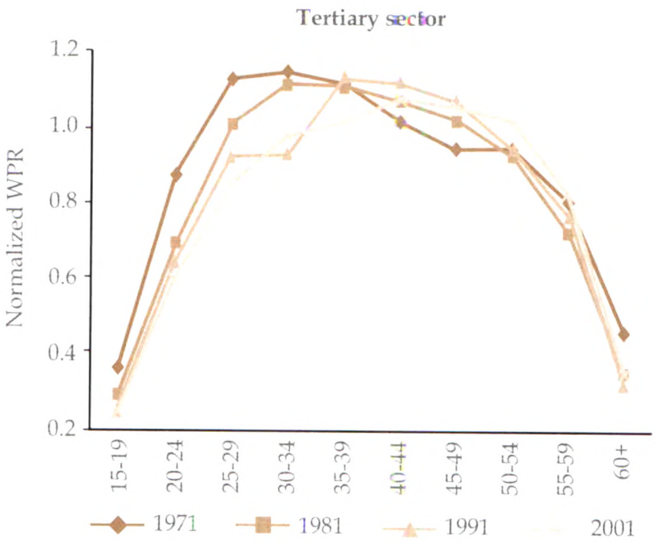
Further, census data provides information on work participation for broad ten-year age groups, 30-39, 40-49, 50-59 etc. The ten-year age groups were converted to five-year age groups using the Karup-King Formula (Siegel and others, 2004).

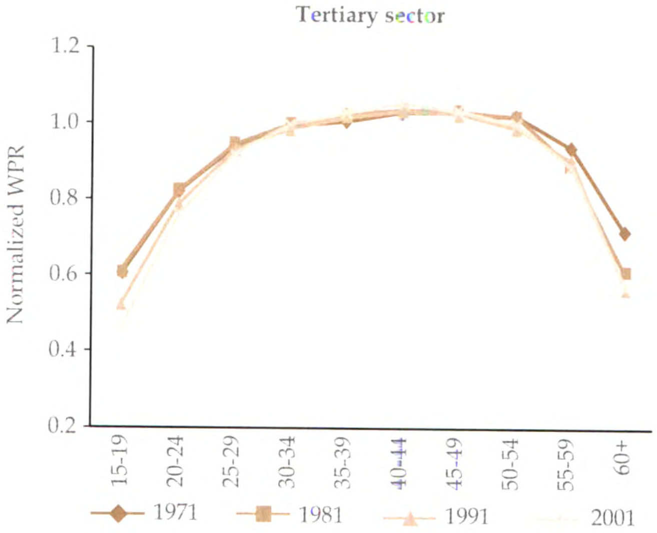
Results

To compare the work participation rates of post retirement age groups with those of prime working age groups, age-specific work participation in each age group in specific sectors was normalized by dividing by the average work participation rate of prime workers (30-59 years) in the corresponding sector of employment. Figure 1 shows the trends in normalized age-specific work participation rates by employment sector. It can be seen that work participation rates in the age group 40-54 in the primary sector were higher than those of prime workers aged 30-59 years during 1971-1991. However in post retirement, work-participation rates were lower by 19 and 29 per cent, respectively, in 1971 and 2001, compared to the prime working age group. Work participation rates during 1971-2001 for the age group 25-49 years in the secondary sector and 35-49 years in the tertiary sector were higher than the average work participation rates of prime workers in age groups 30-59 years.

Figure 1. Trends in age-specific normalized work-participation rates by sector in India (1971-2001)







Work participation rates for people above 50 years, in comparison with the prime working age group, decreased for the entire period from 1971 to 2001 and for people above 60, in 2001, it became lower by 61 and 68 per cent for the secondary and tertiary sectors, respectively. In 2001, total work participation rates for the population above age 60, regardless of sector, was lower by 43 per cent than that of prime workers of 30-59 years, declining from 29 per cent in 1971. The overall message of this analysis is that in all sectors work participation rates at post retirement age in comparison with that of prime working age groups (30-59 years) declined over the period 1971-2001.

Trend analysis of work participation rates by broad age groups suggests that there was a slight increase in the total work participation rate for 15-59 years group to over 600 per 1000 persons during 1971-2001. This increase was due to the increase in female work-participation rates from 546 to 610 per 1000 females, while male work participation rates have declined from 869 to 806 per 1000 males. However, for the post retirement age, total work participation has declined from 432 to 403 per 1000 persons during 1971-2001. On the other hand, for older women work participation rates have increased from 105 to 209 per 1000 and for older men they have declined from 738 to 602 per 1000. This changing age and sex pattern of work participation in India during 1971-2001 is shown in figure 2.

Figure 2. Trends in work participation rates by age and sex in India (1971-2001)

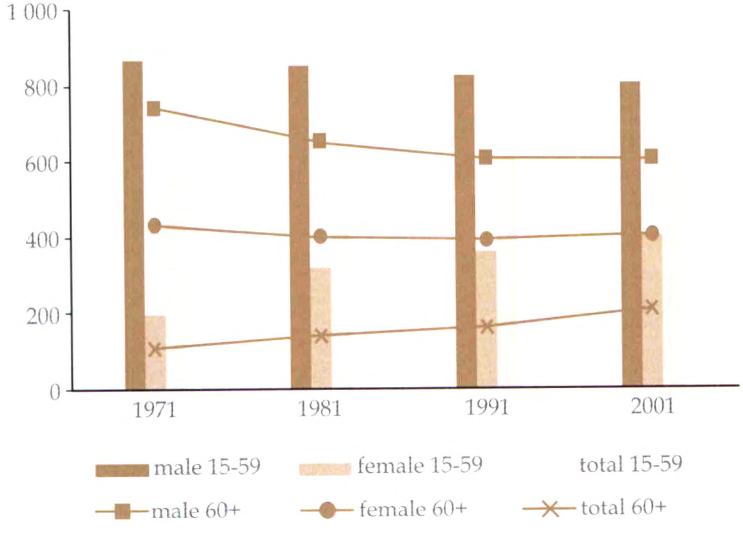


Table 1 shows the working life expectancy (WLE) and life expectancy (LE) from 1971 to 2001. It is noted that working life expectancy for males at age 15 was 42.5 years in 1971 and 42.5 years in 2001 compared to 49.3 years of life expectancy at age 15 in 1971 and 53.7 years in 2001. On the other hand, working life expectancy for females at age 15 has increased from 9 to 19.3 years corresponding to an increase in life expectancy from 49.8 to 52.7 years during 1971-2001. Working life expectancy at age 30 for males was estimated at 32.5 years in 1971 and 33.8 years in 2001 in comparison with the enhancement in life expectancy at age 30 from 36 years in 1971 to 40.2 years in 2001. The increase in female working life expectancy at age 30 for the same period is from 6.8 to 16 years corre-

Table 1. Life expectancy and working life expectancy for India, (1971-2001)

Age group	1971			1981			1991			2001		
	WLE	LE	%WLE	WLE	LE	%WLE	WLE	LE	%WLE	WLE	LE	%WLE
Male												
10-14	42.4	53.8	78.8	43.1	56.1	76.8	42.4	57.1	74.3	42.7	58.4	73.1
15-19	42.5	49.3	86.2	43.1	51.5	83.7	42.4	52.4	80.9	42.5	53.7	79.1
20-24	40.2	44.8	89.7	40.9	47	87.0	40.6	47.9	84.8	40.8	49.1	83.1
25-29	36.7	40.4	90.8	37.4	42.5	88.0	37.3	43.4	85.9	37.7	44.6	84.5
30-34	32.5	36	90.3	33.3	38.1	87.4	33.2	38.9	85.3	33.8	40.2	84.1
35-39	28.3	31.7	89.3	29	33.7	86.1	28.9	34.5	83.8	29.5	35.8	82.4
40-44	24.2	27.6	87.7	24.7	29.4	84.0	24.5	30.1	81.4	25.3	31.5	80.3
45-49	20.2	23.6	85.6	20.5	25.3	81.0	20.3	25.9	78.4	21.1	27.4	77.0
50-54	16.5	19.8	83.3	16.5	21.4	77.1	16.2	21.9	74.0	17	23.4	72.6
55-59	12.9	16.4	78.7	12.7	17.8	71.3	12.4	18.2	68.1	13.2	19.6	67.3
60+	9.9	13.4	73.9	9.5	14.6	65.1	9	14.9	60.4	9.8	16.3	60.1
Female												
10-14	9	54.2	16.6	15.1	58	26.0	17.4	59	29.5	19.6	57.4	34.1
15-19	9	49.8	18.1	15	53.5	28.0	17.3	54.4	31.8	19.3	52.7	36.6
20-24	8.3	45.6	18.2	13.9	49.2	28.3	16.2	50	32.4	19.4	52.7	36.8
25-29	7.6	41.6	18.3	12.6	44.9	28.1	14.7	45.7	32.2	17.8	48.3	36.9
30-34	6.8	37.5	18.1	11.2	40.7	27.5	13.1	41.4	31.6	16	43.9	36.4
35-39	5.9	33.4	17.7	9.7	36.4	26.6	11.3	37	30.5	13.9	39.5	35.2
40-44	5	29.3	17.1	8	32.1	24.9	9.5	32.6	29.1	11.7	35	33.4
45-49	4	25.2	15.9	6.4	27.9	22.9	7.5	28.2	26.6	9.5	30.6	31.0
50-54	3.1	21.3	14.6	4.8	23.8	20.2	5.7	23.9	23.8	7.4	26.3	28.1
55-59	2.2	17.7	12.4	3.4	20	17.0	4	19.9	20.1	5.5	22.2	24.8
60+	1.5	14.3	10.5	2.3	16.4	14.0	2.6	16.2	16.0	3.9	18.5	21.1

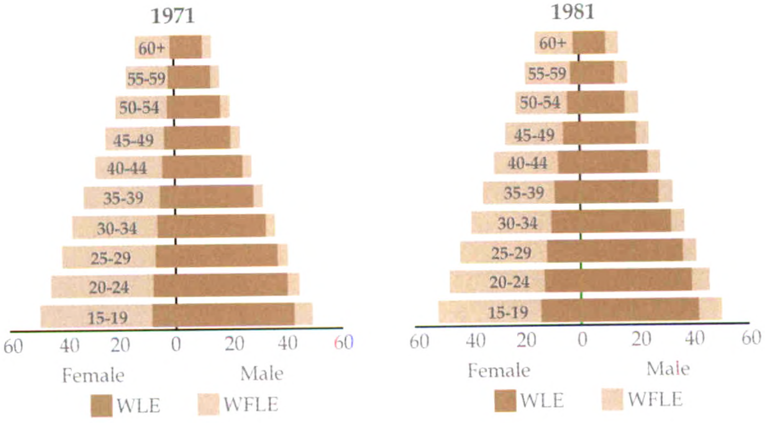
Note: LE: Life expectancy, WLE: Working life expectancy, %WLE=WLE/LE*100 sponding to a jump in life expectancy at age 30 from 37.5 to 43.9 years. At age 45, male working life expectancy was estimated at 20.2 years in 1971 and 21.1 years in 2001 in comparison with 23.6 years and 27.4 years of life expectancy at age 45 in 1971 and 2001, respectively. At age 45, female working life expectancy was estimated at 5.0 years in 1971 and 11.7 years in 2001 while the corresponding life expectancies were estimated at 29.3 years in 1971 and 35.0 years in 2001.

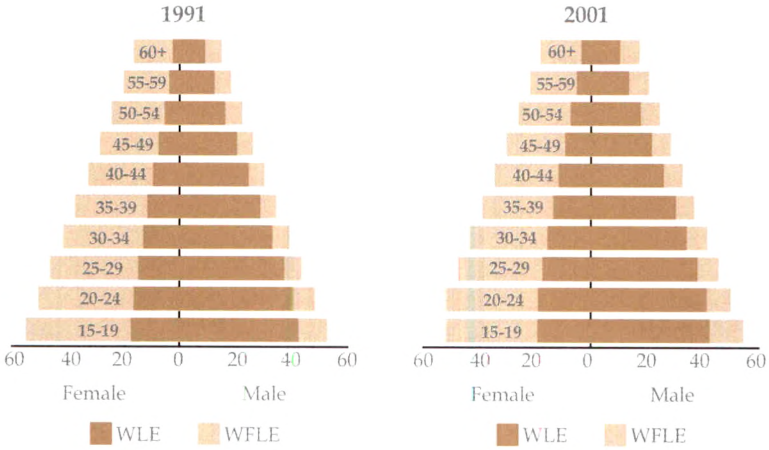
In terms of percentages, males at post retirement age were expected to work 73.9 per cent of their remaining life in 1971 but the percentage had declined to 60.1 in 2001. However, women aged 60 or above were expected to work 10.5 per cent of their remaining life in 1971 but this percentage has increased to 21.1 in 2001.

Moreover, a gap between life expectancy and working life expectancy at post retirement could be observed. There was a significant gap between LE and WLE for females, but the gap has narrowed in the past four decades, while, for males this gap has widened during the same period.

Figure 3 shows the evolving pattern of age-sex pyramids of life expectancy and working life expectancy for India from 1971 to 2001. It is evident from the age-specific gap between life expectancy and working life expectancy that for males with the improvement in life expectancy, working life expectancy has changed marginally. The gap is more evident in the case of younger males mainly because of increased years of schooling before entering the labour market. Whereas for females, although working life expectancy has increased somewhat in the younger age groups as well as in the post retirement age, the gap between life expectancy and working life expectancy is still very wide in comparison with that of males. This indicates a significant difference between male and female work participation and working life expectancy.

Figure 3. Age-sex pyramids of life expectancy and working life expectancy, India (1971-2001)





Note: WFLE: work-free life expectancy; WLE: working life expectancy

Working life expectancies are further calculated by sectors, assuming that there are no differences in mortality in each of the sectors. Results are shown in table 2 and figure 4. There was a 0.8 year decline in the primary sector, a 0.2 year increase in the secondary sector and a 0.3 year increase in the tertiary sector working life expectancy at age sixty from 1971 to 2001. By sex, for males there was a 1.4 year decline in the primary sector, a 0.2 year increase in the secondary sector, a 0.3 year increase in the tertiary sector in working life expectancy at age 60. While for females, a 0.4 year increase in the primary sector, a 0.1 year increase in the secondary sector and a 0.2 year increase in the tertiary sector in working life expectancy was observed during the same period from 1971 to 2001. It can clearly be observed that among older males there is a shift from the primary to the tertiary sector and also that the decline in male working life expectancy comes from the decline in the primary sector. However, female working life expectancy has increased in all sectors.

Analysis of working life expectancy at post retirement age across different States in India (table 3) demonstrates that Kerala's working life expectancy is the lowest among all States, while it is the second highest in terms of life expectancy after Punjab for both males and females. For males WLE is 7.7 years and for females it is 1.8 years, while LE is 19 and 20.6 years for males and females, respectively. This phenomenon in Kerala could be explained by the fact that most people over 60 in the state are return migrants from the Gulf and they may be depending on their savings for their livelihood. On the other hand, Bihar males at age 60 and over have the highest working life expectancy of 12 years corresponding to 17 years of life expectancy at this age, while females in

Table 2. Working life expectancy by age, sex and sectors, India, (1971-2001)

Age group	1971				1981				1991				2001			
	P	S	T	WLE	P	S	T	WLE	P	S	T	WLE	P	S	T	WLE
Total																
10-14	19.4	2.8	4.4	26.7	21.3	3.6	5.0	27.5	21.6	3.3	5.2	28.1	20.4	4.6	7.2	25.6
15-19	19.2	2.8	4.4	26.5	21.2	3.6	5.0	27.5	21.5	3.3	5.3	28.1	20.2	4.6	7.2	25.6
20-24	18.0	2.6	4.3	25.0	19.9	3.4	4.9	26.0	20.3	3.1	5.2	26.8	19.3	4.3	7.1	24.8
25-29	16.7	2.3	3.9	23.0	18.2	3.0	4.6	23.9	18.6	2.8	4.8	24.7	17.8	3.9	6.6	23.1
30-34	15.1	2.0	3.3	20.6	16.5	2.6	4.0	21.4	16.8	2.4	4.2	22.1	16.1	3.4	5.9	20.9
35-39	13.4	1.7	2.8	18.0	14.6	2.2	3.4	18.7	14.8	2.1	3.6	19.3	14.3	2.8	5.1	18.3
40-44	11.6	1.4	2.3	15.4	12.6	1.8	2.7	16.0	12.8	1.7	2.9	16.4	12.4	2.3	4.3	15.7
45-49	9.8	1.1	1.8	12.8	10.6	1.4	2.1	13.2	10.7	1.3	2.2	13.4	10.5	1.8	3.4	12.9
50-54	8.1	0.9	1.4	10.3	8.6	1.1	1.5	10.4	8.7	1.0	1.7	10.6	8.6	1.4	2.6	10.2
55-59	6.4	0.6	1.0	8.0	6.7	0.8	1.0	7.9	6.8	0.7	1.1	8.0	6.8	1.0	1.7	7.7
60+	**4.9**	**0.4**	**0.7**	**6.0**	**5.0**	**0.5**	**0.7**	**5.8**	**5.0**	**0.4**	**0.6**	**5.7**	**5.2**	**0.7**	**1.1**	**5.6**
Male																
10-14	30.0	4.7	7.6	42.4	28.8	5.7	8.5	43.1	27.5	5.3	9.5	42.4	24.3	6.8	11.6	42.7
15-19	30.0	4.7	7.6	42.5	28.8	5.8	8.5	43.1	27.4	5.3	9.6	42.4	24.1	6.8	11.6	42.5
20-24	28.2	4.5	7.4	40.2	27.1	5.5	8.3	40.9	26.0	5.0	9.4	40.6	23.0	6.4	11.4	40.8
25-29	25.9	4.0	6.7	36.7	24.8	4.9	7.7	37.4	23.9	4.5	8.7	37.3	21.4	5.8	10.6	37.7
30-34	23.3	3.4	5.7	32.5	22.4	4.2	6.7	33.3	21.5	3.9	7.6	33.2	19.4	5.0	9.4	33.8
35-39	20.6	2.9	4.7	28.3	19.9	3.5	5.6	29	19.0	3.3	6.6	28.9	17.3	4.1	8.1	29.5
40-44	17.9	2.4	3.8	24.2	17.3	2.8	4.5	24.7	16.6	2.6	5.3	24.5	15.2	3.4	6.8	25.3
45-49	15.3	1.9	3.0	20.2	14.8	2.2	3.5	20.5	14.1	2.0	4.1	20.3	13.0	2.7	5.4	21.1
50-54	12.7	1.4	2.3	16.5	12.3	1.7	2.5	16.5	11.8	1.5	3.0	16.2	10.9	2.0	4.1	17
55-59	10.3	1.0	1.7	12.9	9.8	1.2	1.7	12.7	9.4	1.1	2.0	12.4	8.9	1.5	2.8	13.2
60+	**8.0**	**0.7**	**1.1**	**9.9**	**7.6**	**0.8**	**1.1**	**9.5**	**7.2**	**0.7**	**1.2**	**9**	**7.1**	**1.0**	**1.7**	**9.8**

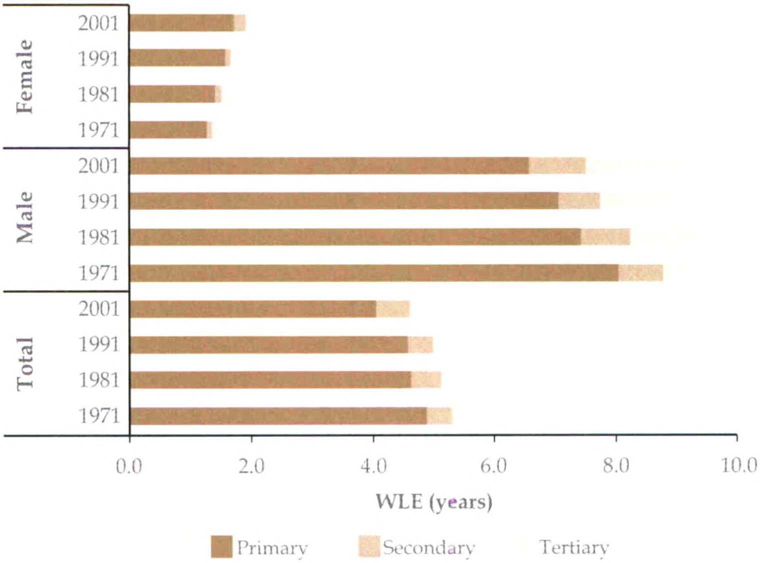
(continued)

Table 2. *(Continued)*

Age group	1971				1981				1991				2001			
	P	S	T	WLE	P	S	T	WLE	P	S	T	WLE	P	S	T	WLE
								Female								
10-14	7.5	0.7	0.9	9	12.7	1.2	1.2	15.1	14.8	1.1	1.5	17.4	15.2	2.0	2.4	19.6
15-19	7.4	0.7	0.9	9	12.6	1.2	1.2	15	14.7	1.1	1.5	17.3	14.9	2.0	2.4	19.3
20-24	6.9	0.6	0.9	8.3	11.7	1.1	1.2	13.9	13.7	1.0	1.5	16.2	15.0	2.0	2.4	19.4
25-29	6.3	0.5	0.8	7.6	10.6	0.9	1.1	12.6	12.5	0.9	1.4	14.7	13.8	1.8	2.3	17.8
30-34	5.7	0.5	0.7	6.8	9.5	0.8	0.9	11.2	11.1	0.8	1.2	13.1	12.4	1.6	2.0	16
35-39	4.9	0.4	0.6	5.9	8.2	0.7	0.8	9.7	9.6	0.6	1.0	11.3	10.8	1.3	1.8	13.9
40-44	4.2	0.3	0.5	5	6.9	0.5	0.6	8	8.1	0.5	0.8	9.5	9.2	1.1	1.5	11.7
45-49	3.4	0.2	0.4	4	5.5	0.4	0.5	6.4	6.5	0.4	0.6	7.5	7.5	0.8	1.2	9.5
50-54	2.6	0.2	0.3	3.1	4.1	0.3	0.4	4.8	5.0	0.3	0.4	5.7	5.9	0.6	0.9	7.4
55-59	1.8	0.1	0.2	2.2	2.9	0.2	0.3	3.4	3.5	0.2	0.3	4	4.4	0.5	0.6	5.5
60+	**1.3**	**0.1**	**0.1**	**1.5**	**2.0**	**0.1**	**0.2**	**2.3**	**2.3**	**0.1**	**0.2**	**2.6**	**3.1**	**0.3**	**0.4**	**3.9**

Note: P: working life expectancy in primary sector; S: working life expectancy in secondary sector; T: working life expectancy in tertiary sector

Figure 5. Working life expectancy at age 60 by sex and sectors



Himachal Pradesh are reported to have 6.7 years of working life expectancy. This is largely due to the engagement of older women in small and cottage industries as it is a popular tourist destination.

This article is an attempt to explore whether there is an association between increased life expectancy and the continuation of economic activity in post retirement age 60 plus in India. It has been demonstrated that, contrary to expectations, in post retirement age total work participation has declined in the period from 1971 to 2001. While elderly female work participation rates have increased, elderly male work participation rates have declined for the same period. Similar results were found for the United States in Burtless et al (2000). Still, economic participation of older women lags behind that of men in India. In all employment sectors, work participation rates at post retirement age in comparison with that of prime working age group 30-59 years declined during the period from 1971 to 2001.

Based on this study, the findings suggest that in terms of the relationship between life and working life expectancies for males, longevity does not promote post retirement work participation. However, for females, it is the other way around as their participation in economic activities has increased with the increase in longevity over time. However, overall, improvements in longevity do not extend working life of the population 60 plus in India. When comparing the ratio of WLE to LE it was found out that for males, 73.9 per cent of their remaining life in

Table 3. Life and working life expectancies at 60+ by sex for major states in India, 2001

State/India	Male		Female	
	WLE	LE	WLE	LE
Kerala	7.7	19.0	1.8	20.6
Orissa	7.9	12.7	2.9	15.9
Gujarat	8.0	15.7	3.0	17.4
West Bengal	8.8	16.4	2.0	17.5
Rajasthan	9.0	16.0	4.0	17.5
Maharashtra	9.4	17.0	5.0	17.9
Karnataka	9.4	16.2	4.1	18.5
Haryana	9.5	19.5	3.7	20.2
Madhya Pradesh	9.8	15.3	4.7	15.9
India	**9.8**	**16.3**	**3.9**	**18.5**
Tamil Nadu	9.9	16.3	4.4	16.9
Andhra Pradesh	10.1	17.1	4.2	17.4
Assam	10.4	15.6	2.6	16.1
Uttar Pradesh	11.1	15.7	3.2	16.6
Himachal Pradesh	11.4	18.0	6.7	17.4
Punjab	11.5	20.5	3.0	21.4
Bihar	12.0	17.5	3.3	17.2

1971 was spent working. This percentage has declined to 60.1 per cent in 2001. A major contribution to this decrease is the decline in older men's work participation in the primary sector. Elderly male work participation has shifted from the primary sector to the formal sector, which is a sign of more productivity in the post retirement period. Still, elderly male work participation is predominantly in the primary sector due to a lack of jobs in the formal sector or lack of skills. When it comes to work participation of women over 60, only 10.5 per cent of remaining life expectancy was gainfully used in work participation in 1971 and this increased to 21.1 per cent in 2001. Although female working life expectancy has increased in all sectors, it is still far behind that of males. A possible reason could be underreporting of work participation as most women do unpaid household work.

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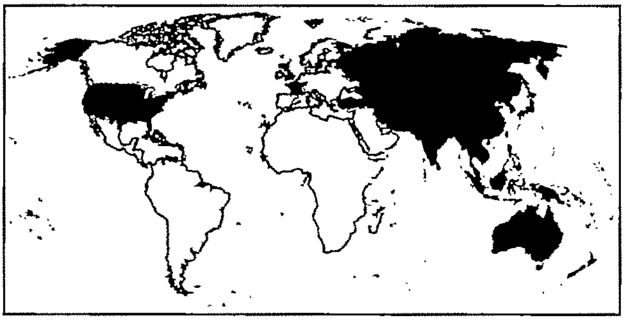

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Published since 1986 by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the *Asia-Pacific Population Journal* (APPJ) brings out high-quality, evidence-based and forward-looking articles on a wide range of population and development issues in Asia and the Pacific.

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Contraceptive (In)Security in South-East Asia
By Rosalia Sciortino

Social Impact of International Migration and Remittances in Central Asia
By Dono Abdurazakova

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ASIA-PACIFIC POPULATION JOURNAL
Vol. 26, No. 4, December 2011

The Asia-Pacific Population Journal is published at least twice a year in English by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

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Demographic transition in Southern Asia: challenges and opportunities

3

Bhakta B. Gubhaju

This paper examines fertility and mortality trends in Southern Asia and their consequences for changes in age structure, dependency ratio, population ageing and feminization of the elderly population. It highlights challenges and opportunities brought about by the demographic transition. In particular the paper suggests ways in which countries in Southern Asia can reap the benefits of the "demographic dividend", which is a one-time "window of opportunity" that countries in the region should fully exploit. This is particularly evident when looking towards future demographic trends in the region in which a number of countries in Southern Asia will need to deal with problems associated with ageing. In preparing for such a future, there is a need to start formulating policies for the elderly today.

Do slum dwellers have lower contraceptive prevalence rates? An analysis of current use patterns in Calcutta, India

29

Mousumi Dutta and Zakir Husain

This paper examines whether there are significant variations in contraceptive prevalence rates between women who live or do not live in slums of Calcutta, India. A Disparity Index is calculated, using unit level data from the 2006 Demographic Health Survey. The Index reveals that variations in overall and modern contraceptive prevalence rates between currently married slum and non-slum respondents are low. Statistical tests (both parametric and non-parametric) reveal that though differences in overall contraceptive prevalence rates are significantly lower in slums, differences in usage of modern methods between slum and non-slum areas is marginal. This is also confirmed by econometric methods using an ordered logit model. This model indicates that slum respondents are reluctant to adopt contraceptives. However, once their initial resistance is overcome, they prefer modern – particularly terminal – methods. Analysis reveals that cultural forces – socio-religious identity, language and preference for more children (particularly sons) – are responsible for creating barriers to adopting family planning methods.

Asia-Pacific Population Journal Vol. 26, No. 4

Mobility as Development Strategy: The case of the Pacific Islands

Donovan Storey and Vanessa Steinmayer

Migration is often portrayed in terms of net gain or loss in which remittances provide the compensation for those States or territories which are seen as disadvantaged in the competition for especially skilled workers. In the Pacific region this dichotomy is illustrated through the loss for countries of origin (Pacific island countries and territories) of their "best and brightest" to the region's larger and more prosperous States. This has occurred to such an extent that many see the limited development gains made by small island States and territories in the post World War Two period as being largely explained by the failure to counter the resulting inequalities in both "brain drain" and "brain gain". This article argues that such a dichotomy misses those shared development gains reaped through increased labour mobility. Indeed, migration can underpin a "development dividend" for the region through the enhancement of increased mobility, including for low-skilled workers. Recent schemes have sought to balance both migration opportunities and development needs. While these are promising, much more could be done to support the conditions in which Pacific Islanders of all socio-economic status can circulate.

Demographic transition in Southern Asia: challenges and opportunities

This paper examines fertility and mortality trends in Southern Asia and their consequences for changes in age structure, dependency ratio, population ageing and feminization of the elderly population. It highlights challenges and opportunities brought about by the demographic transition. In particular the paper suggests ways in which countries in Southern Asia can reap the benefits of the "demographic dividend", which is a one-time "window of opportunity" that countries in the region should fully exploit. This is particularly evident when looking towards future demographic trends in the region in which a number of countries in Southern Asia will need to deal with the challenges faced by ageing populations. In preparing for such a future, there is a need to start formulating policies for the elderly today.

By Bhakta B. Gubhaju*

Introduction

The history of human population shows that the rate of growth of the world's population has been extremely slow, taking more than a century to double from one billion in 1800 to two billion in 1930. Growth then accelerated and another one billion people were added in just 30 years, reaching three billion in 1960 (Population Reference Bureau, 2010). Between 1960 and 2012 population increased significantly with one billion people added every 12 to 14 years. The milestone of seven billion people was reached in October 2011 according to United Nations medium variant projections (United Nations, 2011). United Nations

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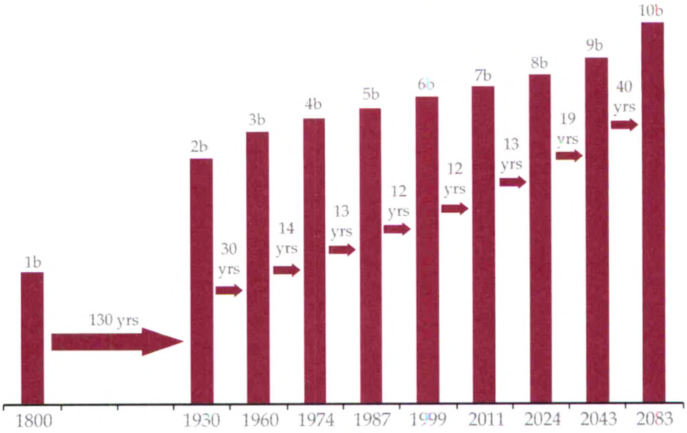
projections reveal that the global population is expected to reach nine billion in 2043 and ten billion in 2083 (figure 1).

Figure 1. Milestones of the world population to reach the next billion

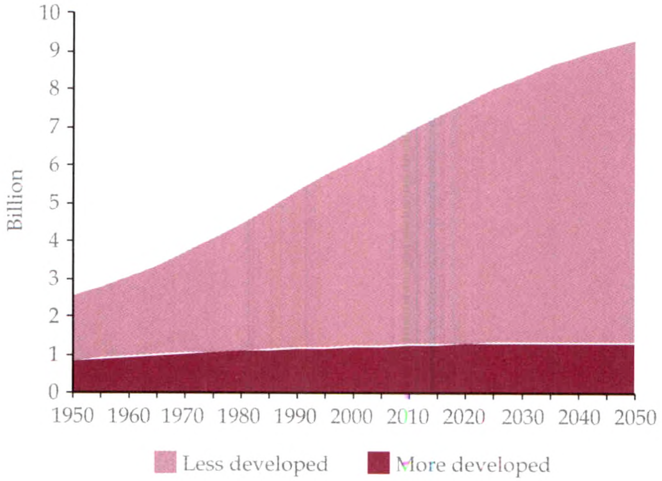


Source: Population Reference Bureau (2010) and United Nations (2011).

The most dramatic growth in world population since 1950 has been in the less developed regions and future growth will also be concentrated in these regions, as the more developed countries are growing more slowly (figure 2). In 2010, 82 per cent of the world's population lived in less developed countries. This proportion will rise to almost 86 per cent by 2050, primarily due to the fact that the first demographic transition began in the developed regions of the world around the latter part of the nineteenth century. Life expectancy at birth which was about 40 years at the start of the transition has now almost doubled and fertility has declined from a high level of about five children per woman to two during the same period (Murphy, 2011). More developed countries have already completed their demographic transitions, with low levels of fertility and mortality and natural increase adding very little to population growth. Many low fertility countries in the world have now reached the "second demographic transition", in which fertility has plummeted to below replacement level (Population Reference Bureau, 2004).

Demographic transition in developing countries started in the middle of the twentieth century with many of these countries at the intermediate stage, in which mortality and fertility are declining at various rates. Although the demographic transition in developing countries started comparatively late, the speed at which mortality and fertility have dropped in some developing countries is remarkable. As stated by

Figure 2. Population growth in more developed and less developed countries, 1950 to 2050



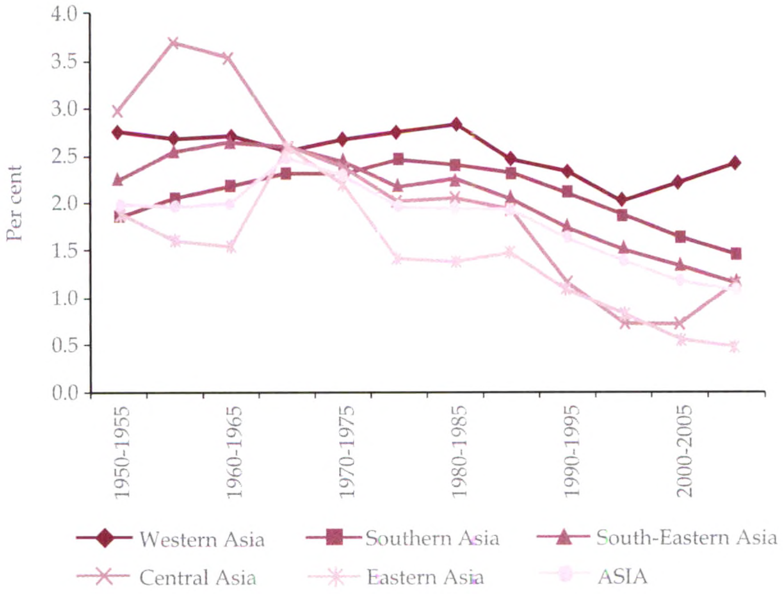
Source: United Nations (2011).

O'Neill and Balk: "in Europe, North America and Japan, mortality fell slowly for two centuries as food supply stabilized, and housing, sanitation, and health care improved. In contrast, mortality in the majority of less developed countries fell over the course of just a few decades after World War II as Western medical and public health technology and practice spread to these regions" (O'Neill and Balk, 2001: 11-12).

This paper aims to focus on the Asian demographic transition, giving particular reference to Southern Asia. Of the world's population in 2010, a dominant share of 4.2 billion (60.4 per cent) lived in Asia. This number will continue to grow and by 2050, Asia will be home to 5.1 billion people (55 per cent). This paper uses data from the *World Population Prospects: 2010 Revision*, which provides comprehensive data on the sex-age distribution of the population and on demographic indicators for all countries of the world from 1950 to 2100 (United Nations, 2011). The data is critical in highlighting trends in fertility and mortality and their implications for changes in age structure of the population, including population ageing.

The demographic transition in Asia started during the second half of the twentieth century, with steady improvement in mortality but with fertility remaining more or less constant for another two decades. This resulted in an increase in the annual population growth rate until such time that fertility began to drop as a response to a decline in mortality. As is evident from figure 3, the rate of population growth in Asia as a whole was 2 per cent per annum during the period 1950-1955. There were, however, large disparities in the rate of population growth by

Figure 3. Average annual growth rate by subregions of Asia, 1950-2010



Source: United Nations (2011).

subregions, with Central, Western and South-Eastern Asia growing faster than Eastern and Southern Asia. In 1965-1970, the growth rate of populations in all the subregions of Asia converged at around 2.5 per cent per annum. With this fertility decline, the Asian region in general witnessed a deceleration in the population growth rate from 1970-1975 onwards. While disparity in the growth rate by subregions of Asia continued to widen, the overall growth rate in Asia as a whole has been reduced to 1 per cent per annum at present.

In Southern Asia[i], the population growth rate which was less than 2 per cent per annum in 1950-1955 continued to rise. After reaching its peak at 2.5 per cent per annum in 1975-1980, the growth rate began to decline sharply, approaching the current per annum figure of less than 1.5 per cent.

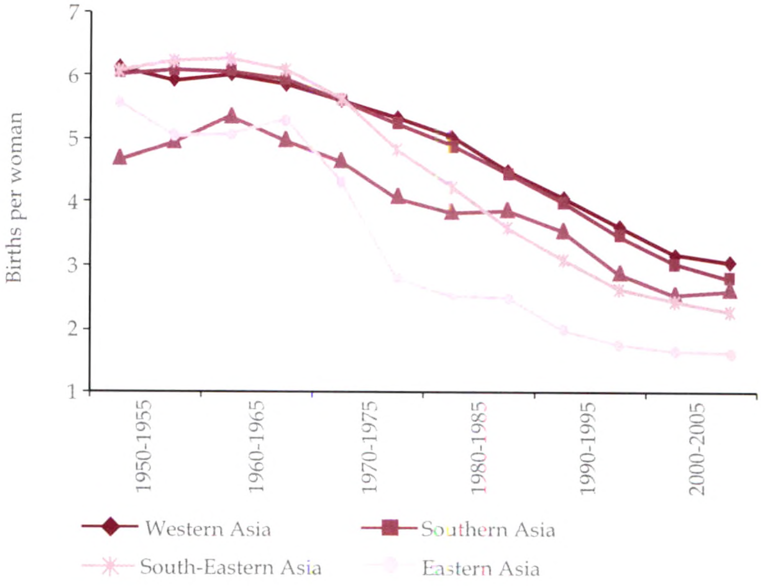
In the sections that follow, this paper will first present fertility and mortality trends in Southern Asia. It will then examine the consequences that are due to changes in age structure, dependency ratio, population ageing and feminization of the elderly population. The paper will highlight challenges and opportunities brought about by the demographic transition. It will also provide policy recommendations to deal with ageing problems and suggest ways to reap the benefits of the current "demographic dividend" for future generations.

Fertility

During the second half of the twentieth century, there was a remarkable decline in fertility in the Asian region. The region as a whole experienced a drop in the total fertility rate (TFR) from 5.8 births per woman during the period 1950-1955 to 4.0 in 1975-1980, with a further decline to 2.7 in 1995-2000. The TFR of the region is estimated at 2.3 for 2005-2010. However, this regional average masks considerable disparities in the TFR among subregions.

Figure 4 shows that the TFR fell to below the replacement level (2.0) in Eastern Asia from 1990-1995 and it continued to fall to 1.6 from 2005-2010. While South-Eastern Asia witnessed a remarkable drop in fertility, approaching close to the replacement level at 2.3, in Western, Southern and Central Asia, the TFR was 3.0, 2.8 and 2.6 children per woman, respectively in 2005-2010.

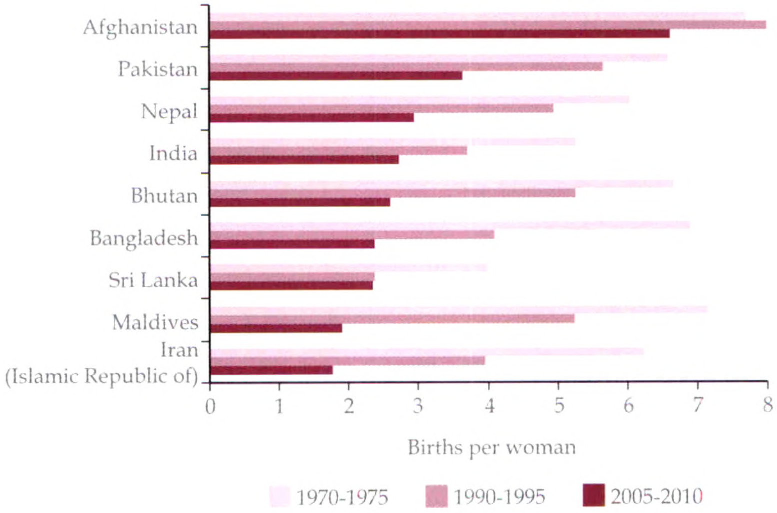
Figure 4. Total fertility rate by subregions of Asia, 1950-2010



Source: United Nations (2011).

However, figure 5 shows that the total fertility rates in Southern Asia vary to a large extent by country. With the exception of Sri Lanka, high fertility of above five children per woman prevailed in much of Southern Asia during the period 1970-1975. Fertility transition began to take

Figure 5. Total fertility rate in Southern Asia, 1970-2010



Source: United Nations (2011).

place in most of the countries during the past 30 years and many of them experienced substantial declines in fertility between the periods 1970-1975 and 1990-1995. The notable exception is Sri Lanka which initiated fertility transition as early as 1955-1960. Sri Lanka experienced a spectacular decline in fertility from 5.8 in 1955-1960 to 4.0 in 1970-1975. It continued to drop further to 2.4 in 1990-1995 and fell close to replacement level in 1995-2000. However, Sri Lanka has witnessed a recent reversal in its fertility decline (De Silva, et. al 2010).

Closely following Sri Lanka is India which began fertility transition in 1965-1970. The TFR dropped significantly from 5.7 in 1965-1970 to 3.7 in 1990-1995. It continued to decline further, but at a slower pace, approaching 2.7 in 2005-2010. The remaining countries in the subregion did not begin fertility transition until much later. Bangladesh, the Islamic Republic of Iran and Nepal initiated fertility transition in 1980-1985, while Bhutan, Maldives and Pakistan did so in 1985-1990. What is so striking about the fertility transition in Southern Asia is the speed at which countries experienced change. Bangladesh witnessed a dramatic fall in fertility from 6.9 in 1970-1975 to 4.1 in 1990-1995, a reduction of almost three children per woman in a span of two decades. There has, however, been a slow-down in this decline in recent years.

Most of the countries in the subregion currently fall in the category of intermediate fertility, ranging from 2.4 children per woman in Sri Lanka to 3.6 in Pakistan. Below replacement fertility was reached in the Islamic Republic of Iran in 2000-2005, followed by the Maldives in 2005-2010. The total fertility rate in Bhutan, Bangladesh, India, Nepal and Sri Lanka is close to replacement level.

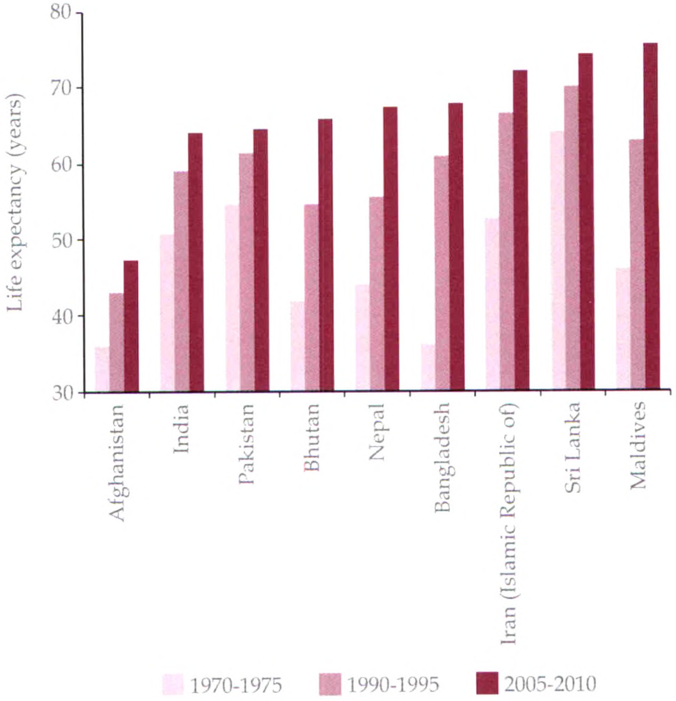
Mortality

As with fertility, there has been a remarkable improvement in life expectancy at birth. In Asia as a whole, a child born today can expect to live on average for 70 years. This figure is up from an average life span of 45 years five decades ago. There is, however, a considerable difference in life expectancy in the subregions of Asia. Eastern Asia has a life expectancy at birth of 74 years, followed by 72 years in Western Asia and 69 years in South-Eastern Asia. At the other end of the spectrum are Central Asia and Southern Asia where the life expectancy at birth is 66 years and 64 years respectively.

In so far as Southern Asia is concerned, life expectancy at birth was relatively low in 1970-1975. It is evident from figure 6 that Sri Lanka is the only country in the subregion where the life expectancy at birth exceeded 60 years in 1970-1975. While India, the Islamic Republic of Iran and Pakistan had life expectancies at birth of over 50 years, in Afghanistan, Bhutan, Nepal, Bangladesh and the Maldives, this indicator was below 50 years during the same period. However, there has been a steady improvement in mortality in the subregion during the past 40 years. Countries which achieved a life span of more than 70 years in 2005-2010 include the Islamic Republic of Iran, the Maldives and Sri Lanka. At the other end of the spectrum are Afghanistan, India and Pakistan with lower than 65 years of life expectancy at birth. Rapid improvement in mortality was experienced by Bhutan, Nepal and Bangladesh over the past 40 years. In Bangladesh, there has been a dramatic increase in life expectancy at birth, rising from 36 years in 1970-1975 to 61 years in 1990-1995, with a further increase to 68 years in 2005-2010.

With the advancement in longevity, a wide gender disparity in life span has emerged in many low fertility countries. In developed regions of the world, females outlive males by about seven years on average (United Nations, 2010). By contrast, in Asia the gender disparity in the expected number of years lived is not as wide as in developed countries. However, the subregions of Asia present great variations in life expectancy at birth between males and females. In Central Asia, the female to male difference in life expectancy at birth is eight years while this difference in Southern Asia is only three years. In other subregions of Asia, the gender disparity in life expectancy at birth is between four and five years.

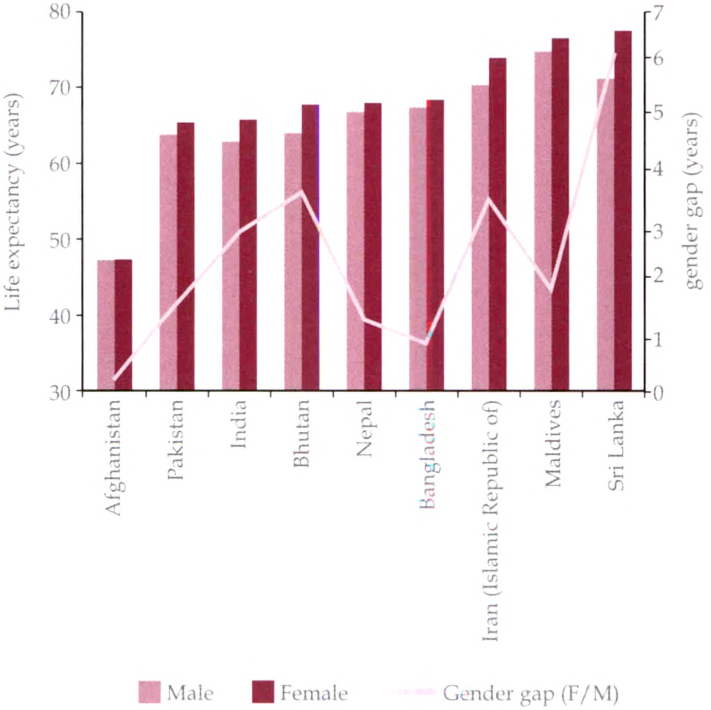
Figure 6. Life expectancy at birth in Southern Asia, 1970-2010



Source: United Nations (2011).

Although the gender disparity is not as wide in Southern Asia, it does reveal a widening gap of life expectancy between women and men at birth (figure 7). For example, the female advantage in life expectancy at birth is six years in Sri Lanka and about four years in Bhutan and the Islamic Republic of Iran. By contrast, the gender gap in life expectancy at birth is less than three years in Bangladesh, India, Maldives, Nepal and Pakistan. There is virtually no gender gap in life expectancy at birth in Afghanistan, where it is low for men and women. This is attributed to the fact that the mortality decline is substantially higher among females than males in practically all age groups (United Nations, 2010). A lower than expected gender gap in life expectancy at birth in Bangladesh, Maldives, Nepal and Pakistan is due to low life expectancy at birth of females associated with relatively low status of women and high maternal mortality.

Figure 7. Gender gap in life expectancy at birth in Southern Asia, 2005-2010



Source: United Nations (2011).

Consequences

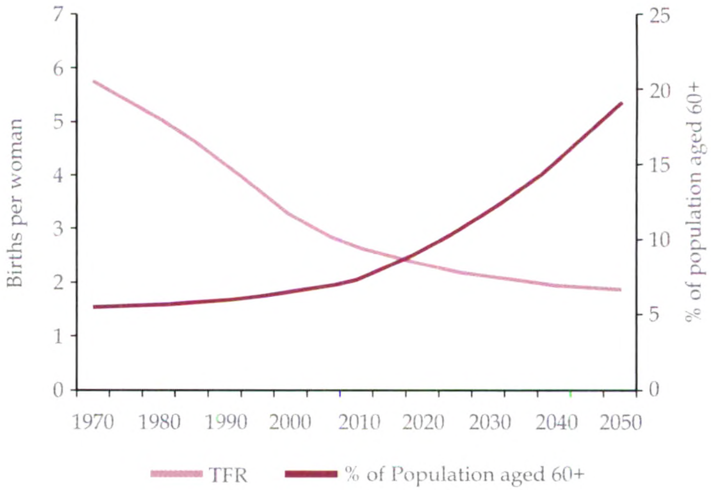
Changes in age structure

Declining fertility, increasing longevity and the widening disparity in life expectancy at birth between females and males have brought remarkable shifts in the age and sex structure of the population. As a result of low fertility, fewer children are born and progressively larger numbers of adults move into the older age groups. Changes in age structure of the population and population ageing are inevitable consequences of low fertility.

While the transition from a young-age population to an ageing population occurred over a much longer period in the West, the speed of ageing was much faster in the low fertility countries of Asia (Kinsella and Phillips, 2005). For instance, it took 115 years for France and 85 years for Sweden to raise the percentage of the population aged 65 years and older from 7 per cent to 14 per cent. By stark contrast, Japan took only a quarter of a century to complete such a transition. Similarly, other low fertility countries in Asia, such as China, the Republic of Korea, Singapore and Thailand, are projected to follow the trend set by Japan. This rapid ageing process has been driven largely by sharp declines in fertility in recent decades. This has now emerged as a new issue challenging many low fertility countries in the region. The implications are profound as it implies a shrinking labour force, an increase in elderly dependency ratios and a feminization of the elderly population. There are other contentious issues related to health care cost, social support and financial security that are likely to be faced by an ageing society (National Research Council, 2001).

It can be seen from figure 8 that declining fertility has had a significant impact on the rising percentage of populations over age 60. It is also evident that the impact of a fertility decline on population ageing is much more revealing in the later stage as the high fertility cohort begins to reach the older age groups. In addition, improvement in mortality not only increases life expectancy at birth but also increases the number of additional years expected to be lived by older persons aged 60 and 80 years (United Nations, 2010). These improvements in old-age mortality have contributed to the ageing of the elderly themselves. In the long run, population ageing will inevitably result in a higher rate of growth of the elderly population. This will eventually lead to a decline in the overall growth of the population in general and the working-age popu-

Figure 8. Total fertility rate and % of population aged 60 years or over in Southern Asia, 1970-2050



Source: United Nations (2011).

lation in particular, as an older age structure provides the momentum for a decline in population, just as young-age population provides the momentum for an accelerated growth of population (McDonald, 2000).

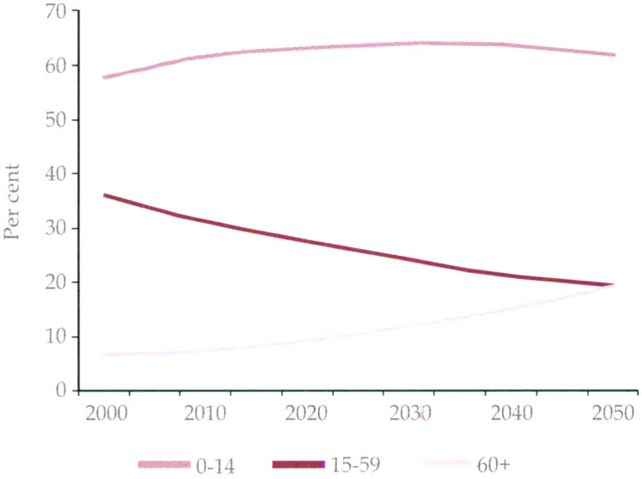
There is a strong relationship between the total fertility rate and the percentage of a population aged 60 years and older. Countries which have reached below replacement fertility have a markedly higher percentage of older persons. Long-term decline in fertility gives rise to a higher percentage of older persons. The rapidity of the ageing process is determined by the speed of fertility decline. For example, Japan – the first country in Asia to have completed the fertility transition from high to low fertility by the early 1960s – had the largest percentage of older persons in 2010 (30.4 per cent), and is predicted to rise further to 36 per cent in 2025 and 44 per cent in 2050. Similarly, a long-term decline in fertility in China, the Republic of Korea, Singapore and Thailand has resulted in a high percentage of older persons (12 to 16 per cent) in 2010. These countries will further exhibit a sharp increase in older persons. By 2050, the share of older persons to total population is expected to exceed 40 per cent in the Republic of Korea and Singapore, while in China and Thailand older persons will represent respectively 31 and 26 per cent of the total population.

Southern Asia will also exhibit a gradual shift in the proportion of the young-age population and old-age population. While the proportion of the population under age 15 will decrease, the proportion of the population aged 60 years and older will increase. However, unlike in Eastern Asia, where young-age and old-age populations will converge around 2015, this situation will occur around 2050 in Southern Asia. Furthermore, while Eastern Asia will experience a rapid fall in working-age population, Southern Asia will continue to have an abundant supply of labour, with working-age populations representing over 60 per cent of the total population for another four decades (figures 9 and 10).

Nonetheless, Southern Asia has experienced more than a four-fold increase in the number of old-age populations (60 plus) over the past six decades, from 28 million in 1950 to 125 million in 2010 (figure 11). The size of older populations will rise to 215 million in 2025, which will further increase by more than two-fold to 458 million in 2050. In terms of percentage, older populations in Southern Asia, which represented 7.3 per cent in 2010 will increase to 10.5 per cent in 2025 and 19.1 per cent in 2050. This represents nearly a three-fold increase over four decades and an addition of 333 million people aged 60 years and over.

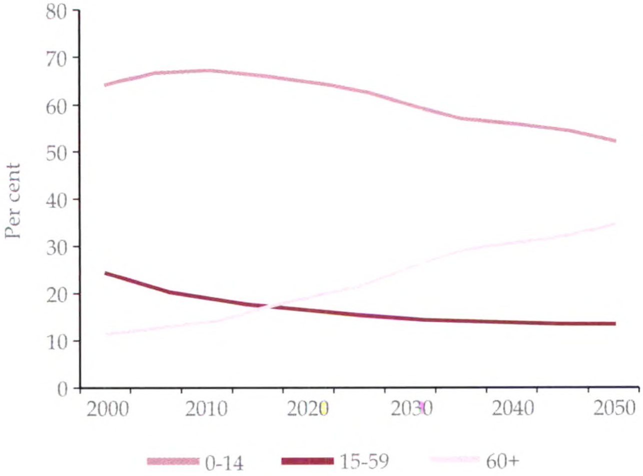
However, there is a noticeable difference in the percentage of older population by countries in Southern Asia (figure 12). In 2010, only four countries in this subregion; Bhutan, the Islamic Republic of Iran, India and Sri Lanka were considered to have an aging population, which is

Figure 9. Distribution of population by broad age groups in Southern Asia, 2000-2050



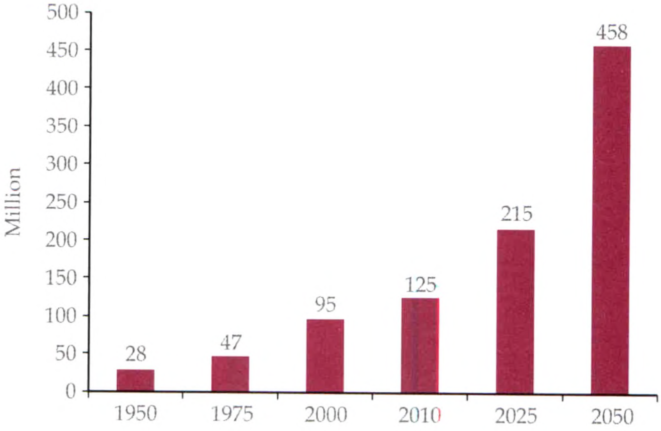
Source: United Nations (2011).

Figure 10. Distribution of population by broad age groups in Eastern Asia, 2000-2050



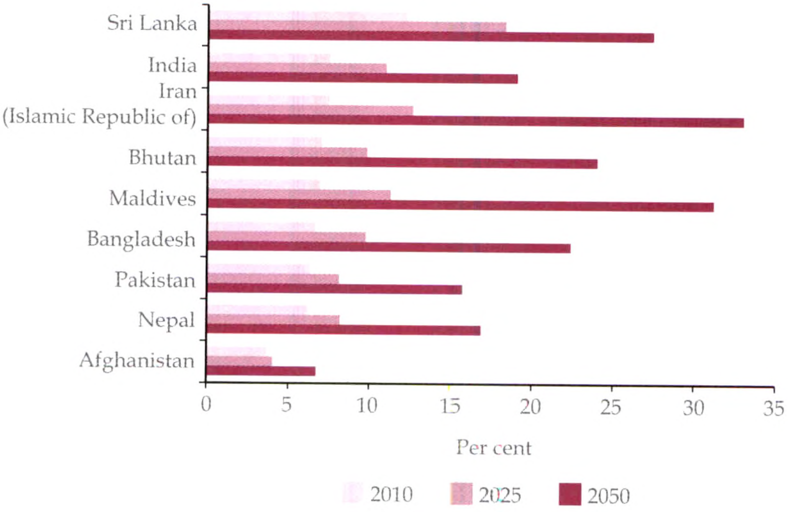
Source: United Nations (2011).

Figure 11. Population 60 years and over in Southern Asia, 1950-2050



Source: United Nations (2011).

Figure 12. Percentage of population 60 years or over in Southern Asia, 2010-2050



Source: United Nations (2011).

defined as having 7 per cent of the total population aged 60 years and older. By 2025, all countries, except Afghanistan, will have an ageing population.

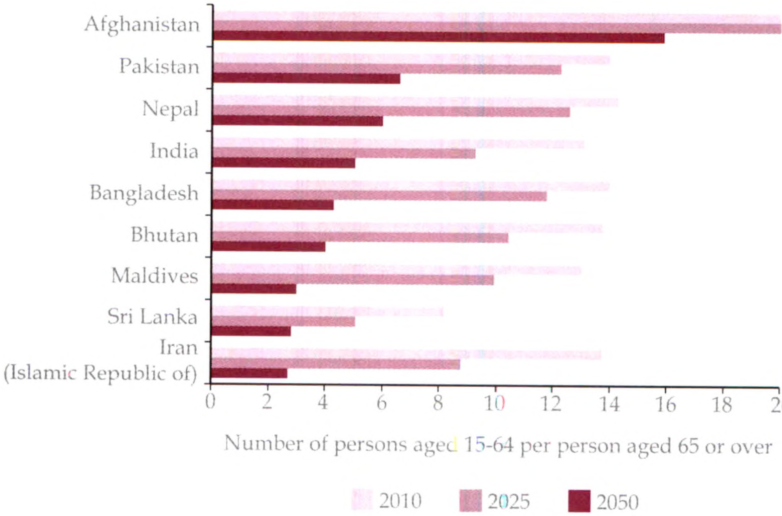
As previously discussed, Sri Lanka was the notable exception in Southern Asia where the fertility transition started much earlier. As a consequence of a steady decline in fertility, Sri Lanka has witnessed a gradual increase in its older population, which reached 12 per cent of the total population in 2010, and will increase to 18 per cent in 2025. This number will further rise to 27 per cent in 2050, which would mean that more than one out of four Sri Lankans will be aged 60 years or over. Similarly, low fertility countries, such as the Islamic Republic of Iran and the Maldives, will experience a sharp increase in their older populations. Although fertility transition in the Islamic Republic of Iran and the Maldives began in the 1980s, they completed the transition in less than three decades. As a result of this spectacular decline in fertility, the ageing process in both countries will be exceptionally rapid. For instance, the Islamic Republic of Iran will witness the fastest subregional growth in percentage of older population, rising from 7.5 per cent in 2010 to 12.7 per cent in 2025, which will further increase to 33 per cent in 2050. Likewise, in the Maldives this proportion will increase from close to 7 per cent in 2010 to 11 per cent in 2025 and to 31 per cent in 2050.

Potential support ratio

As a consequence of age structure changes in population, Southern Asia will exhibit a significant shift in dependency ratios: while dependency burdens of the young will fall, those of the old will continue to rise. This will have major implications on the number of potential workers available to support older populations. This can be measured by using a simple indicator referred to as the potential support ratio, which is the inverse of the old-age dependency ratio, defined as the number of persons aged 15 to 64 for every person aged 65 or over (United Nations, 2010).

It is apparent from figure 13 that as the population ages, the potential support ratio tends to fall. The low fertilitiy countries, such as the Islamic Republic of Iran, the Maldives and Sri Lanka will experience a remakable drop in the potential support ratio in the next 40 years. Currently, Sri Lanka has eight persons of working age available to support one older person, but this ratio will drop to 5:1 in 2025 and by 2050, less than three working-age persons will be available to support one older person. In the Islamic Republic of Iran and the Maldives, the potential support ratio will also drop to three or less in 2050, but the decline has been remarkably fast due to a rapid decline in fertility in a short time. Other countries, such as Bangladesh and Bhutan, will also witness a sharp drop in the potential support ratio between 2025 and 2050.

Figure 13. Potential support ratio in Southern Asia, 2010-2050

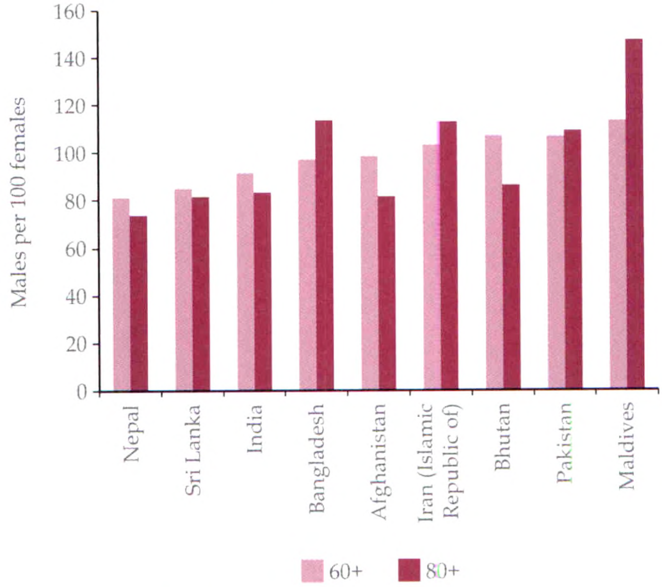


Source: United Nations (2011).

Feminization of the elderly population

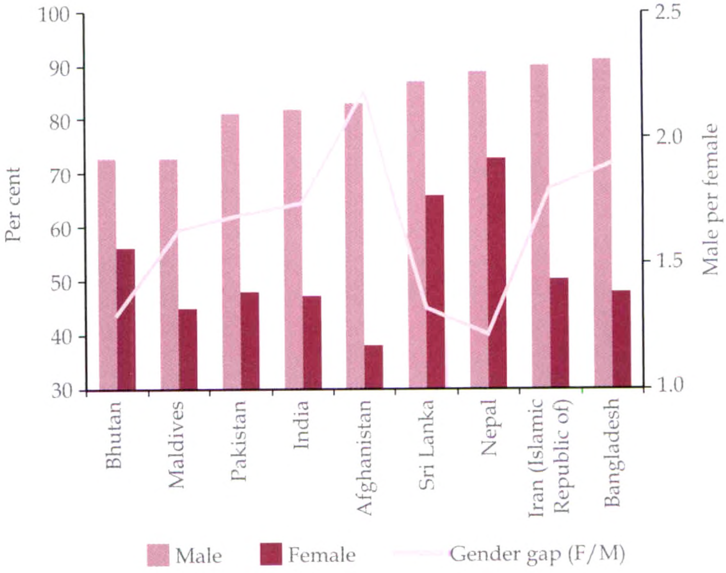
Lower potential support ratios will have a significant impact on older women as their numbers will continue to grow proportionately faster than those of men. This is because of the large gender disparity in the life expectancy at birth, with females having a longer life span than males. As a result, women will outnumber men in the older age groups in every country in Southern Asia. The feminization of the elderly population (more female elderly than male elderly) is already seen in many countries in Southern Asia, with the sex ratio (males per 100 females) below 100 (figure 14). This is particularly pronounced among women aged 80 years and older. The greater number of women in the older age group is typically viewed as problematic, because they reflect high levels of widowhood and the various difficulties associated with it (Mujahid, 2006a). A higher proportion of women are likely to be widowed owing to the differences in the age of the spouse at the time of marriage (women tend to be younger than their spouse) and a higher life expectancy at birth for women compared to men. The percentage of women widowed increases with age as they tend to re-marry less frequently upon divorce or the death of a spouse. This trend is clearly visible in the data presented in figures 15 and 16, which show a great disparity in marital status and living arrangements of men and women of older ages. Among those 60 years or over, while more males are currently married than their female counterparts, more females are living alone.

Figure 14. Feminization of elderly population 60+ and 80+ in Southern Asia, 2010



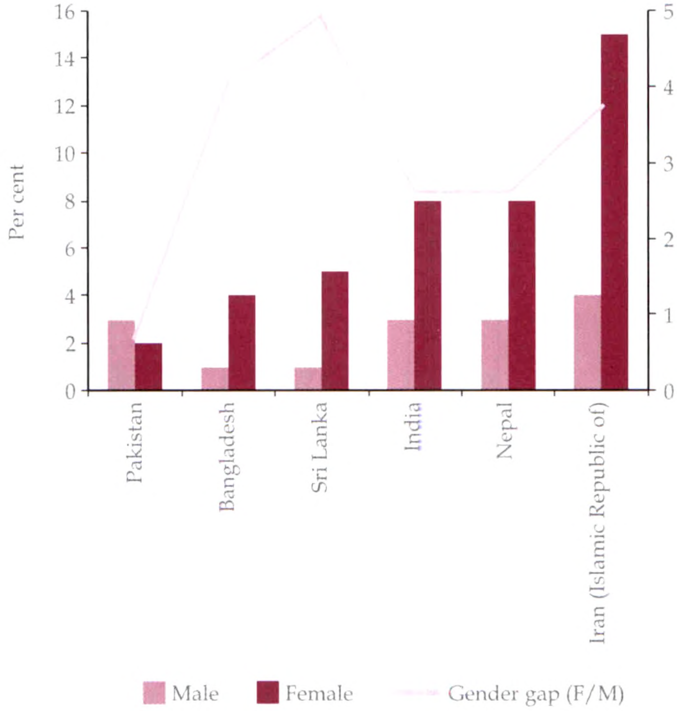
Source: United Nations (2011).

Figure 15. Percentage of elderly population 60 years or over currently married in Southern Asia



Source: United Nations (2009).

Figure 16. Percentage of elderly population 60 years or over living alone in Southern Asia



Source: United Nations (2009).

Challenges and opportunities

Challenges

It has been shown that declining fertility and mortality resulting in population ageing has emerged as an issue facing several countries in Asia, including some countries in Southern Asia. The implications of such population ageing and associated growth in the size of elderly populations are of particular concern. A higher proportion of older persons is often perceived as posing a serious burden on economic and social support and health care systems. The rising number of elderly on one hand, and the declining number of the younger population on the other, will also mean that there will be a shortage of caregivers for the elderly population. As women will regularly outnumber men in the older age groups, the social and financial security as well as the health conditions of elderly women will be one of the biggest problems faced by ageing societies.

The rising number of older persons has important policy implications in the provision of health and social services (Gubhaju and Moriki-Durand, 2003 and Mujahid, 2006b). In many Asian countries, particularly those in Southern Asia, the healthcare infrastructure is already weak with most of its resources utilized to address the needs for mother and child health services and to provide reproductive health services, including family planning. Therefore, the medical, public health, social services and other facilities required to address the needs of older persons are likely to put severe strain on the healthcare system and economy (Knodel, Ofstedal and Hermalin, 2002). Furthermore, as age is a major risk factor for non-communicable diseases such as cardiovascular disease, cancer and diabetes, population ageing raises sharp concerns over the need for long-term healthcare systems. To counterbalance the high costs for treatment and care associated with non-communicable diseases, which account for nearly three-fifths of all deaths, there is a need for greater emphasis on disease prevention and screening for early detection (Bloom, 2011).

With an increasing number of younger women entering the labour force, often away from home, the availability of caregivers for older persons is decreasing. With rapid urbanization, globalization and migration experienced by many Asian countries, the situation is further exacerbated, leading many older persons in rural areas without caregivers (Hermalin and Myers, 2002 and Nizamuddin, 2003).

It has been found that more elderly males are currently married than their female counterparts, but more elderly females are living alone than elderly males. It should, however, be noted that the percentage of elderly males and females living alone is rather small, as in many Asian societies the family continues to provide them with care and support and the tradition of older persons residing with family members is generally the norm (Knodel and others, 1999). However, as traditional means of support are steadily eroding in most societies, there is an urgent need for alternative means of support for older persons, especially to those poor women living alone.

In many Asian countries, women are disadvantaged as they have less education, work experience, income and access to assets than men, as well as diminished authority within the family. Hence, women are more likely to be dependent upon family members and public programmes, especially at advanced age and under conditions of illness and disability (Mujahid, 2006b). These needs put extra pressure on family members for care giving (Knodel, Ofstedal and Hermalin, 2002). More importantly, a majority of countries in Asia do not have social security systems in place. Even countries that have social security systems face problems in caring for older persons. Day-to-day care requires a great deal of resources, which include assistance from family members. Caregivers are usually women who are then caught up with the multiple responsibilities of raising children, caring for elderly parents and engaging in economic activities – forming what is called the sandwich generation. For this group of caregivers, more intensive and practical government support should be provided to ensure support towards older persons.

Considering the experience of low fertility countries in Eastern and South-Eastern Asia, countries in Southern Asia should consider the consequences of declining fertility rates. It is crucial that governments plan ahead for their ageing societies before fertility drops well below the replacement level. In this regard, governments are increasingly being urged to start preparing policy measures to deal with ageing problems as soon as possible including the establishment of universal pension systems (Mason, Lee and Russo, 2002 and Ogawa, 2003).

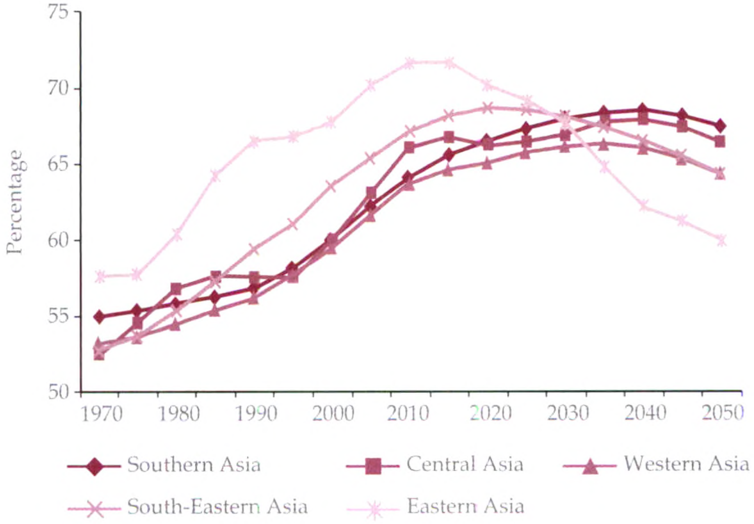
Opportunities – Reaping the demographic dividend

As stated earlier, the Asian region has presented highly diverse trends in fertility over the past six decades. In general, the region had a very high fertility in the early 1950s, with the fertility transition first occurring in Eastern Asia in the late 1950s. Fertility transition began to take place in most countries in Southern Asia over the past 30 years and many of them experienced substantial declines in fertility between the periods 1970-1975 and 1990-1995.

Owing to recent declines in fertility, countries in Southern Asia have a relatively large and rising working-age population. This growth in working-age population with fewer dependent children and elderly to support provides a "window of opportunity" to build human capital. Studies have revealed that the benefit afforded by the changing age structure, referred to as the "demographic dividend", will last for a few decades, typically between four and seven, in most countries (Seetharam, 2006). The "window of opportunity" is relatively short and temporary, closing as the population ages and dependency ratios increase.

It can be seen from figure 17 that all subregions in Asia, while at various stages of the demographic transition, have experienced significant increases in the proportion of working-age populations since the 1970s. They have either entered the peaks of the demographic bulge or are reaching it – and in both cases are well placed to reap the "demographic dividend" before their populations start ageing. The demographic transition has been fastest and most pronounced in Eastern Asia, where the working-age population, about 57 per cent in 1970, peaked at 72 per cent in 2010, before declining rapidly. South-East Asia is also at advanced stages of the demographic transition, where the working-age population will peak in 2025. While in the case of Southern, Central and Western Asia, swelling numbers of working-age populations will peak around 2040 and then begin to decline.

Figure 17. Demographic dividend in Asia: percentage of population aged 15-64

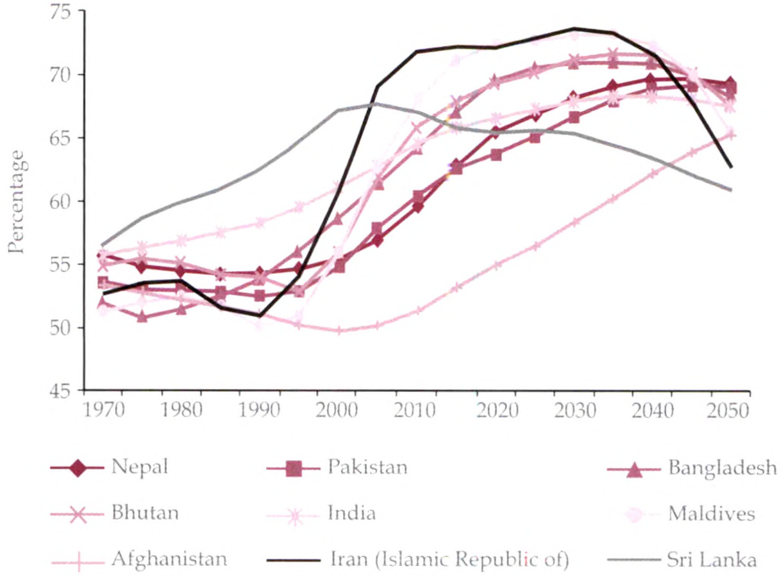


Source: United Nations (2011).

In so far as Southern Asia is concerned, it has lagged behind Eastern and South-Eastern Asia in the demographic dividend. South-East Asia has recently begun to reap the benefit from the demographic dividend, but is likely to see this benefit reduced over the next two decades, as the population ages. On the other hand, demographic transition in Southern Asia is still continuing, suggesting the potential for economic growth. It is clearly visible from figure 18 that with the exception of Sri Lanka, the share of working-age populations will continue to grow in all the countries of Southern Asia, which is expected to last for another two or three decades. However, to fully capitalize on the benefits of demographic dividend, Southern Asia would need to put in place similar types of investments and policy initiatives employed by Eastern Asia. These include, for example, massive investments in education and human resource development. Such investments are possible because of savings from low dependency ratios resulting from the demographic transition. These savings should be properly utilized to increase the capacity of the current and future labour force to participate fully in a skill-based economy.

The opening of a "demographic window" has been effectively utilized by several East Asian countries/areas (Japan, the Republic of Korea and Taiwan Province of China) between the 1960s and 1990s (Bloom, Canning and Sevilla, 2003). The East Asian experience provides compelling evidence of the impact of the "demographic dividend" in the region's

Figure 18. Demographic dividend in Southern Asia: Percentage of population aged 15-64



Source: United Nations (2011).

spectacular economic growth. Studies suggest that the demographic dividend accounts for between one-fourth and two-fifths of East Asia's "economic miracle". The phenomenal growth of per capita income, rising by more than 6 per cent annually between 1965 and 1990, was credited to the size of working-age population growing nearly four times faster (an average of 2.4 per cent a year) than the dependent population. With the benefits of good education and a liberalized trade environment, this huge workforce was absorbed into the job market, thereby increasing the region's capacity for economic production (Bloom, Canning and Sevilla, 2003).

China's experience in effectively capitalizing on the demographic dividend is similar to other East Asian countries. China's rapid fertility decline in the 1970s has brought a significant demographic dividend, which coincided with the economic boom. An abundant labour supply, combined with a relatively low dependency ratio (young and old), made a significant contribution to increasing per capita output and, thus, the standard of living. Hence, China has been able to reap the benefit of favourable population structure, which contributed to 15 per cent of China's economic growth between 1982 and 2000 (Wang and Mason, 2005).

In conclusion, while the importance of policy to reap the benefits of demographic dividend was demonstrated in Eastern Asia, Southern Asia is yet to put into place appropriate social and economic policies to reap the benefit from demographic dividend to spur economic growth and invest in the future. David Bloom has cautioned that "reaping the demographic dividend is not automatic—it depends on a policy environment that emphasises population and family planning, good public health, good education, open labour market, free and fair trade, and good governance and economic management" (Bloom, 2002). Effective policies in those key areas allow maximum returns from a concentration of the population in the working age cohort. Transforming a youthful population into a productive workforce requires investment in education at all levels, while a larger, better-educated workforce will yield benefits only if they can find jobs. In many countries, necessary steps to reaping the benefits of the demographic dividend include strengthening the rule of law, improving the efficiency of government and reducing corruption (Bloom, Canning and Sevilla, 2003).

It is, therefore, important to create awareness among planners and policymakers of the relevance of demographic dividend for investment planning and human resources development in policy formulation. The demographic dividend is a one-time window of opportunity from which the Asian countries, including Southern Asia, should not fail to fully benefit (United Nations, 2007: 32). It is also essential that the region prepares for the irreversible demographic transition to follow, where a much greater proportion of its population will be older and require greater support.

Endnotes

[i] Southern Asia consists of 9 countries, namely Afghanistan, Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan and Sri Lanka. During the past 6 decades, Southern Asia saw an unprecedented growth in population, rising from 490 million in 1950 to 835 million in 1975 and to 1.5 billion in 2000. In 2010, the population of Southern Asia reached 1.7 billion, which is expected to increase to 2.4 billion in 2050.

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Do slum dwellers have lower contraceptive prevalence rates? An analysis of current use patterns in Calcutta, India

This paper examines whether there are significant variations in contraceptive prevalence rates between women who live or do not live in slums of Calcutta, India. A Disparity Index is calculated, using unit level data from the Demographic Health Survey (2004-2005). The Index reveals that variations in overall and modern contraceptive prevalence rates between currently married slum and non-slum respondents are low. Statistical tests (both parametric and non-parametric) reveal that though differences in overall contraceptive prevalence rates are significantly lower in slums, differences in usage of modern methods between slum and non-slum areas is marginal. This is also confirmed by econometric methods using an ordered logit model. This model indicates that slum respondents are reluctant to adopt contraceptives, but once their initial resistance is overcome, they prefer modern – particularly terminal – methods. Analysis reveals that cultural forces – socio-religious identity, language and preference for more children (particularly sons) – are responsible for creating the barriers to adopting family planning methods.

By Mousumi Dutta and Zakir Husain*

1. Introduction

Although the Government of India was among the first in the world to formulate a national family planning programme in the early 1950s, the focus of policymakers subsequently shifted, particularly since the Eighth Five Year Plan (1992-1997), to other aspects of human development. The National Population Policy, 2002, for instance, sets a target for reducing the total fertility rate to 2.1 by 2010 but ignores issues related to family planning and does not set any targets for contraceptive prevalence rates. This neglect may be attributed to the steady decline in the population growth rate since 1991[1] (Agarwal and Bharti, 2006). However, India's population, at 1.21 billion in 2011, according to provisional estimates by Census authorities, comprises about one fifth of the world's population and is growing. Further, one third of the population in 2001 was under 15 years of age, while half was of reproductive age. This creates a substantial momentum for an increase in absolute population size in the future, particularly since contraceptive prevalence rates are low in India[2] (Alagarajan and Kulkarni, 2008).

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The absence of access to a wide range of contraceptives, leading to unplanned fertility[3] (Badar and others, 2007) is another issue requiring the attention of policymakers. This leads to a high incidence of unintended pregnancies which in turn increases unsafe abortions, sex-selection practices, greater vulnerability to maternal mortality, infant mortality, proportion of under-weight infants and so on. Unprotected sex also increases the risk of contracting HIV/AIDS and STDs. In addition, birth spacing, planned conception and number of births are wider issues related to the empowerment of women. Consequently, family planning still remains an important concern of Indian society, particularly among those sections of the population who are less aware of the benefits and methods of family planning. One such group is the population in urban slums (Sclar and others, 2005).

There are different definitions of slums,[4] a review of which is provided in the Ministry of Housing and Urban Poverty Alleviation report on urban slums (GOI, 2010: 2-7). The Demographic Health Survey (DHS) uses the definition adopted by the Census authorities of India. This defines a slum as "A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in an unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities" (Office of Registrar General and Census Commissioner of India, 2005). In 2001, slum dwellers comprised 23 per cent of the population in cities with a population of more than a million. A recent study estimated that slum dwellers comprised 26.7 per cent of the urban population in India, and 35.9 per cent in West Bengal (Government of India (GOI), 2010). Studies have noted the rapid growth of population in slums, attributable to both natural growth and migration (United Nations Human Settlements Program, 2007). Further, despite the availability of healthcare services in urban areas, slums often do not have adequate access to such facilities so that healthcare indicators may fall to levels prevailing in rural areas

(Poel and others, 2007; Lalou and Grand, 1997; United Nations Human Settlements Program, 2003).

In this paper we shall examine whether this dualism spills over to family planning practices. In particular, we shall examine variations in contraceptive prevalence rates and choice of methods between slum and non-slum areas. We shall also try to identify the socio-economic determinants of contraceptive adoption. The geographical area of the study is Calcutta, one of the major metropolitan centres in India. The paper is based on unit level data from the DHS 3rd wave (2004-2005).

2. Literature survey

There have been several studies on family planning methods in the slums of India, not all of which have reached the same conclusions. Bhatnagar (1994) reported that contraceptive prevalence rates (CPR) were marginally lower among slum dwellers in South Delhi, with condoms being the commonly used method of modern birth control. This conflicts with the findings of Agrawal and Bharti (2006) that sterilization is the commonly used family planning method in slums.

Kotwal and others (2008), based on a survey of working women in the slums of the city of Jammu, discovered a wide lack of knowledge with regard to desirable reproductive health practices and the prevalence of myths regarding reproductive health care. The researchers also found that women living in slums often have scant information about reproductive health care and consider this aspect to be a matter of shame, one to be kept hidden from others. Kotwal and others (2009) noted that the main sources of contraceptives typically were Government health units and local chemists.

Other studies have highlighted the lack of awareness regarding birth spacing and low use of contraceptives (Agrawal and Bharti, 2006, Das and Shah, 2001). Based on a survey of the Govind Puri slum area in Delhi, Bhattacharya (2009) observed that women were unable to make independent reproductive decisions, such as determining the number, timing and spacing of children.

On the other hand, Das and Shah (2001) observed that 61 per cent of married slum dwellers in Baroda used some birth control method. The study found that 56 per cent of married women used modern contraceptive methods, with female sterilization being the most popular. Bhasin and others (2005) also found a high contraceptive prevalence rate among slum dwellers of Delhi, with condoms and tubectomies being the commonly used methods.

In a study of the Calcutta slums, Sen (2001) found that there were distinctive differences between the middle class and the poor regarding reproductive and contraceptive behaviour and social acceptance of family planning. Surprisingly, a higher contraceptive prevalence rate was reported by slum dwellers[5] (Basu, 2005), with a preference for modern and irreversible methods (such as sterilization). The preference for terminal methods has also been noted by Chattopadhyay and others (2004) and Dutta and Husain (2011), though condoms were almost equally popular.

Thus, there are significant regional variations in findings regarding contraceptive prevalence rates among slum-dwellers. This possibly reflects the influence of local customs and the social environment. One method of dealing with such variations is to concentrate on a specific region. In this paper we focus on Calcutta, India's third largest metropolitan city, after Mumbai and Delhi, with a population of 4.6 million. The Calcutta Metropolitan Corporation has a slum population of 1.49 million persons, comprising 32.5 per cent of the population. Female slum-dwellers number 0.66 million (32 per cent of the female population of KMC). Literacy and employment levels are typically low[6] (Bawah and others, 1999).

While the sheer magnitude of need calls for attention, there are other justifications for the choice of Calcutta. The political stability of Calcutta forms a sharp contrast to other cities, as West Bengal (the state in which Calcutta is situated) has been ruled by a coalition of communist and socialist parties (forming the Left Front) for over 30 years. Given the political ideology of the Left Front, particularly the emphasis on redistributive justice and the focus on improving quality of life of the poor, an analysis of the situation in Calcutta's slums is instructive for policy-makers and researchers. The cultural diversity of the city, with people from different cultures and regions flocking to the city in search of work, is another reason for choosing this metropolitan city. Such analysis is facilitated by the release of the DHS-3 data, providing, for the first time, a large database on reproductive and child health for both slum and non-slum dwellers of the city.

3. Data and methods

3.1 Database

The paper is based on unit level DHS-3 data. This survey, undertaken in 2005-2006, is the third in a series of national surveys[7] (Becker, 1977). It was conducted under the stewardship of the Ministry of Health and Family Welfare, Government of India, with the International Institute for Population Sciences in Mumbai serving as the nodal agency. The

DHS is a household survey which provides estimates of indicators of population, health, and nutrition by background characteristics at the national and state levels. Information was collected based on individual interviews conducted with women aged 15-49 years.

Applying city-level filters to the individual file (IAIR51), the data on Calcutta's female population was extracted from the DHS-3 data set. It was found that a total of 1615 out of 2471 respondents were currently married (table 1). The analysis is based on this subsample, which was further subdivided into two groups – slum-dwellers (789 respondents) and non-slum-dwellers (826 respondents). The latter is used as the control group in this study.

Table 1. Current marital status of sampled women in Calcutta, estimated from DHS-3 (2005-2006) unit level data

Marital status	**Slum**	**Non-slum**	**Total**
Never married*	30.4	28.4	29.4
Married	63.4	67.4	65.4
Widowed	4.1	2.7	3.4
Divorced	0.1	0.1	0.1
Not living together	2	1.5	1.7
Total	**1 245**	**1 226**	**2 471**

Note: * Includes married, but Gauna not performed.

3.2 Research issues and methodology

The research questions to be examined in this paper are:

a) Is there a significant disparity in contraceptive prevalence rates, particularly for modern contraceptives, between slum and non-slum populations?

b) What explains variations in choice of family planning methods between slum and non-slum dwellers?

c) What are the lessons for policymakers?

A disparity index, suggested by Sopher (1980) and modified by Kundu and Rao (1986), is used to measure the extent of disparity in contraceptive acceptance levels. This is followed by t-tests and non-parametric tests to examine whether the difference is statistically significant. Such tests, however, do not control for socio-economic characteristics of the samples. Regression models, on the other hand, incorporate the effect of socio-religious identity, culture, age, number of living children, education, economic status, participation in the labour force and empowerment to explain variations in the contraceptive prevalence rates between slum and non-slum areas. Further, they enable the identification of factors determining acceptance of contraceptives.

Existing studies (D'Souza, 2003; Kamaal, 2000, 2007; Kamaal and Huda, 2008; Stephenson, 2004; Waiz, 2000) use binary or multinomial logistic models to identify the determinants of contraceptive prevalence rates. The choice variable analyzed is discrete but not binary - possible responses are not using any method, using folkloric methods, using traditional methods or using modern methods[8] (Bhasin and others, 2005). Given the low incidence of folkloric methods, traditional and folkloric methods can be combined, so that the choice variable can assume three values (no method, traditional or folkloric and modern). In such cases a multinomial model is appropriate. Further, given that the options can be ordered ordinally in terms of reliability, the ordered logit model is appropriate (McCullagh, 1980).

The ordered logit model is based on the proportional odds, or parallel lines, assumption. This implies that regression coefficients are invariant across different choices. As this assumption is strong, Long and Freese (2006) have suggested the use of a Brant test to assess the validity of this structure. If tests indicate that the assumption of proportional odds is incorrect, the question arises whether the coefficients vary for all or only some of the explanatory variables. Gamma parameterization may be undertaken to identify those variables which do not satisfy proportional odds assumption (Peterson & Hassel 1990; Lall and others, 2002), while the Likelihood Ratio test aids in selecting the parsimonious model.

3.3 Sample profile

The socio-economic characteristics of the sample are given in table 2. Some of the important features of slums are indicated below.

1. Based on information on religion and caste, respondents are categorized into four categories - Muslims, Upper Caste Hindus (UCH), Backward Caste Hindus (BCH) and a residual category, All others. UCHs comprise the largest socio-religious group in both samples, while Muslims constitute a third of the slum population.
2. Calcutta attracts migrants from not only other parts of West Bengal, but also from neighbouring states such as Bihar and Uttar Pradesh. This results in high levels of cultural diversity within slums. Language has been used as a proxy to capture this diversity. There are three major linguistic/cultural groups - Bengali speaking (55 per cent), Urdu speaking (10 per cent) and Hindi speaking (31 per cent) - among residents of Calcutta slums. The latter two groups are ex-

Table 2. Socio-economic profile of currently married respondents in Calcutta, estimated from DHS-3 (2005-2006) unit level data

Characteristics	Slum	Non-slum	Total
Socio-religious identity			
Muslim	31.9	12.6	22
Upper Caste Hindu	48.3	69.2	59
Backward Caste Hindu	17.5	16.1	16.8
All others	2.3	2.1	2.2
Language spoken (proxy for culture)			
Hindi or Urdu	41.3	20.5	30.7
Other languages	58.7	79.5	69.4
Educational profile			
Illiterate	33.7	12.6	22.9
Primary	17.5	9.9	13.6
Secondary	41.8	50.4	46.2
Higher	7	27.1	17.3
Partner's educational level			
Illiterate	22.2	7.9	14.9
Incomplete primary	15.3	9.6	12.4
Incomplete secondary	47.3	41.6	44.4
Complete secondary	1.5	1.7	1.6
Higher	13.7	39.2	26.7
Age group			
15-19 years	4.7	2.5	3.6
20-24 years	13.4	11.5	12.4
25-29 years	20.2	17.3	18.7
30-34 years	17.9	18.6	18.3
35-39 years	18.8	17.7	18.2
40-44 years	16.2	17.6	16.9
45-49 years	9	14.8	12
Number of living children			
No child	12.8	11.7	12.3
1 child	23.6	39.5	31.7
2 children	28	32.1	30.1
3 children	18	10.8	14.3
4 children	9	3.8	6.3
5 or more children	8.6	2.2	5.3
Distribution by Wealth Index			
Poorest	1.5	–	0.7
Poorer	3.8	0.6	2.2
Middle	13.4	5.7	9.5
Richer	45.1	28.1	36.4
Richest	36.1	65.6	51.2
Occupational Status			
Non working	74.9	73.6	74.2
Working	25.1	26.4	25.8

pected to be more conservative and so are grouped together. Bengali speaking populations are also grouped together with the residual (comprising four per cent of respondents from slums). In non-slum areas, in contrast to slums, the proportion of Hindi or Urdu speaking respondents is much lower (21 per cent).

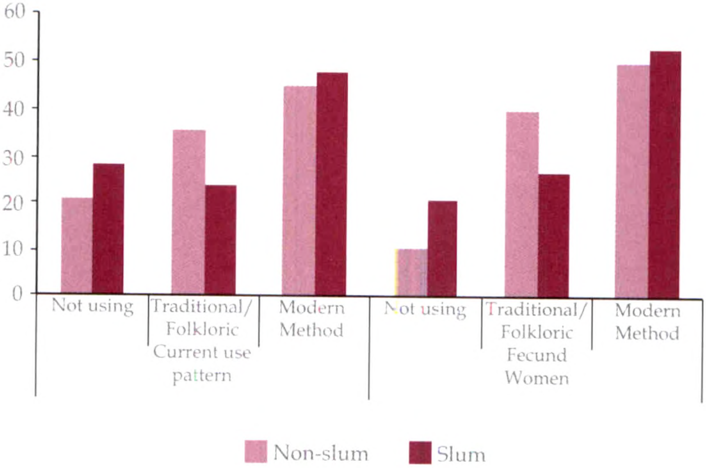
3. The level of education of both slum-dwellers and their partners is much lower than that of the control group. In particular it may be noted that while 34 per cent of respondents from slums are illiterate, this proportion is only 13 per cent in non-slum areas. If partners are considered, the corresponding proportion is 22 per cent and eight per cent, respectively.
4. The majority of respondents are in the age group 25 to 39 years. There are no marked differences between age distribution of slum and non-slum respondents.
5. Household size is marginally higher in slums (5.6), compared to non-slum areas (5.4). The number of living children and the number of sons are also higher in slum areas (2.2 and 1.2), relative to non-slum areas (1.6 and 0.8). While 83 per cent of respondents in non-slum areas have less than three children, this figure is much lower in slums (64 per cent). About a third of the respondents from slum areas have at least three children (36 per cent).
6. Expectedly, the proportion of respondents classified in the wealthiest bracket using the index provided by the DHS survey is lower in slum areas. The average wealth index score of slum dwellers (0.44) is also lower than that of non-slum persons (0.94).
7. About a fourth of respondents are engaged in economic activities in both areas. The proportion of seasonal workers is very low, even in slums. More than 90 per cent of employed respondents work throughout the year.

4. Results

4.1 Contraceptive prevalence rates

An analysis of the data on current contraceptive use reveals that 24.3 per cent of currently married women sampled from Calcutta do not practice any method of contraception, while the prevalence of traditional and modern methods are 29.5 per cent and 46.1 per cent, respectively. A lower proportion of the slum population, relative to the non-slum population, use contraceptives (71.7 per cent in slums, compared to 79.5 per cent in non-slum areas – a gap of 7.8 percentage points, Fig. 1)[9] (Bhatt and Xavier, 2005).

Figure 1. Levels of contraceptive use in Calcutta, estimated from DHS-3 (2005-06) unit level data



		Non-slum	Slum
Current use pattern	Not using	20.46	28.26
	Traditional/Folkloric methods	34.99	23.95
	Modern methods	44.55	47.78
Fecund women	Not using	10.61	20.62
	Traditional/Folkloric methods	39.32	26.51
	Modern methods	50.07	52.88

However, if we consider the type of method used, we find that a greater proportion of slum dwellers use modern methods of contraception. These prevalence rates are slightly higher among slum-dwellers (47.8 per cent in slums, compared to 44.6 per cent among the non-slum population), while the prevalence of traditional contraceptive methods are at 35 per cent among slum women and 24 per cent among non-slum women. If one considers only contraceptive users, we find that 66 per cent of slum women using contraceptives rely on modern methods, while this proportion is only 56 per cent in non-slum areas. This finding is somewhat surprising as we would expect that women of lower socio-economic status and with less access to information might be more reluctant to use modern methods.

A possible explanation of the result may be the influence of family planning programmes among the poor. As Alaka Basu points out "The bulk of the acceptance of birth control among the poor has been attributed to the family planning programme, both as a source of supplies and services and as a frequently coercive force for motivation and information" (Basu, 2005: 311). An important feature of this programme is its reliance on sterilization. Women having more than two children and delivering in institutional set ups are generally persuaded to get sterilized through incentives – often without explaining the health and fertility implications (Kameswari and Vinjamuri, 2011). This proposition is supported by estimates from DHS data (table 3), revealing a high incidence of sterilization among slum women (41.3 per cent in slums, compared to 27.9 per cent in non-slum areas – a gap of 13.5 percentage points). This makes it interesting to speculate as to whether the greater reliance on modern contraceptive methods by slum dwellers is a matter of conscious choice, or is the result of the thrust toward sterilization by the government.

Table 3. Choice of contraceptive method among slum and non-slum contraceptive using women of Calcutta, estimated from DHS-3 (2005-2006) unit level data

Method	Slum	Non-slum	Total
Pill	11.1	12.3	11.8
IUD	1.4	2.0	1.7
Injections	0.7	0.2	0.4
Condom	11.5	13.4	12.5
Female sterilization	41.3	27.9	34.1
Male sterilization	0.4	0.2	0.2
Periodic abstinence	18.6	18.9	18.7
Withdrawal	14.7	25.1	20.3
Foam or jelly	0.2	0.2	0.2
Folkloric method	0.2		0.1

The extent of disparity between the adoption of any method and the use of modern methods is measured using an index suggested by Sopher (1980). The index measures the disparity between two groups in their possession of a particular property (in this case adoption of a contraceptive) in terms of the logarithm of the odds ratio - that is, the ratio of the odds that any member of one group (non-slum) has the desired property to the odds that any member of the other group (slum) does. Specifically, if p and q are the probabilities of currently married non slum-dwellers and slum-dwellers using contraceptives respectively, then the disparity index (DI) is given as:

$$DI_S = \log \left[\frac{p * (1-q)}{q * (1-p)} \right].$$

Kundu and Rao (1986) have shown that the above index fails to satisfy the additive monotonicity axiom[10] (Bhatnagar and others, 1994). They have, therefore, proposed a modification to this index as follows:

$$DI_{KR} = \log \left[\frac{p * (2-q)}{q * (2-p)} \right].$$

The value of Sopher's index is only 0.0014 (among women currently using *any* method) and 0.0010 (among women currently using modern methods). This is quite low, so that differences in contraceptive prevalence rates between slum and non-slum women appear marginal. However, t-tests and non-parametric tests indicate that although the difference in use rates of specifically modern contraceptives is not statistically significant (t=1.30; χ^2=1.69), the differences in *overall* contraceptive prevalence rates between slum and non-slum respondents *is* statistically significant (t=3.67; χ^2=13.36). So, it appears that residence in a slum *does* matter with respect to the probability of adopting contraceptives - though not in the case of adopting modern methods. Therefore, we should examine whether this variation can be explained in terms of the differences in socio-economic and demographic profiles between the slum and non-slum population observed in table 2.

4.2 Socio-economic and demographic correlates of CPR

In table 4 we have shown contraceptive prevalence rates of the slum and non-slum population classified by the control variables. The significant findings are discussed below.

Contraceptive prevalence rates vary widely across socio-religious communities. In particular, researchers have observed that Muslims have relatively lower CPRs (Iyer, 2002; Bhatt and Xavier, 2005; James and Nair, 2005, Kulkarni and Alagarajan, 2005, Bhattacharya, 2009)[11]. This is also observed in Calcutta. However, two points are worth noting. Firstly, the gap between CPRs of Muslims and other communities reduces if we consider usage of modern methods - in fact a higher proportion of Muslims use modern methods than do UCH or the non-Muslim minorities. Secondly, it is sometimes argued that low CPRs among Muslims may be attributed to their proportionately lower levels of education and income, rather than any innate reluctance to adopt family planning methods. In the DHS-3 sample, for instance, the majority of Muslims live in slums (71 per cent, as opposed to 43 per cent for other communities). This may lower contraceptive prevalence rates within the Muslim community. Another important finding is that contraceptive prevalence rates of Backward Caste Hindus (BCH) are higher than that of Upper Caste Hindus in both slum and non-slum areas.

Culture also plays an important role in the adoption of family planning methods (Thapan, 1997). As mentioned before, Hindi and Urdu speaking migrants from Uttar Pradesh, Bihar and Jharkhand may be expected to be conservative and therefore reluctant to adopt family planning methods[12] (Blanc, 2001). On the other hand, a large proportion of the Hindi- and Urdu-speaking community in the non-slum areas of Calcutta are well-off, educated and prefer reliable birth control and spacing methods. This is borne out in table 4.

Table 4. Current contraceptive use pattern of currently married respondents in Calcutta, estimated from DHS-3 (2005-2006) unit level data

Control variables	Slum			Non-slum		
	Never used	Other method	Modern method	Never used	Other method	Modern method
Socio-religious identity						
Muslim	34.9	17.5	47.6	26	26.9	47.1
Upper Caste Hindu	27	27.8	45.1	20.6	37.6	41.8
Backward Caste Hindu	21	23.2	55.8	15	29.3	55.6
All others	16.7	38.9	44.4	23.5	41.2	35.3
Culture (language as proxy)						
Hindi / Urdu speaking	33.4	19	47.6	24.9	23.7	51.5
Others	24.6	27.4	48	19.3	37.9	42.8
Education of respondent						
No education	26.3	19.9	53.8	21.2	15.4	63.5
Primary	31.9	15.2	52.9	17.1	31.7	51.2
Secondary	28.8	28.5	42.7	21.6	38	40.4
Higher	25.5	38.2	36.4	19.2	39.7	41.1
Education level of partner						
No education	30.9	16.6	52.6	26.2	15.4	58.5
Below primary	24.8	23.1	52.1	13.9	25.3	60.8
Below secondary	27.3	26.8	45.8	18.3	38.1	43.6
Secondary	25	33.3	41.7	28.6	21.4	50
Higher secondary	31.5	25.9	42.6	22.8	38.6	38.6
Age of respondent (years)						
15-19	59.5	13.5	27	42.9	14.3	42.9
20-24	39.1	19.1	41.9	20	31.6	48.4
25-29	23.9	23.9	52.2	21	33.6	45.5
30-34	22.7	31.2	46.1	6.5	43.5	50
35-39	16.2	27.7	56.1	6.9	42.5	50.7
40-44	25	25	50	24.8	39.3	35.9
45-49	47.9	12.7	39.4	45.1	18	36.9

(continued)

Table 4. *(Continued)*

Control variables	Slum			Non-slum		
	Never used	Other method	Modern method	Never used	Other method	Modern method
Number of living children						
No children	42.9	5.9	3.7	53.8	6.9	6
1-2 children	40.8	66.5	47.5	42.3	85.8	68.2
3-4 children	10.9	22.3	37.9	2.6	6.6	23.1
More than 5 children	5.4	5.3	10.9	1.3	0.7	2.7
Wealth Index						
Poorest	50	8.3	41.7	–	–	–
Poorer	46.7	10	43.3	20	–	80
Middle	24.5	17	58.5	21.3	23.4	55.3
Richer	27.8	23.3	48.9	20.7	29.3	50
Richest	27.4	29.5	43.2	20.3	38.7	41
Work status						
Non working	29.9	25.9	44.2	20.9	35.1	44
Working	23.2	18.2	58.6	19.2	34.7	46.1
Whether respondent is allowed to go for health check up alone						
Alone	18.57	35.18	46.25	24.57	23.03	52.4
With someone else	25.12	35.27	39.61	35.88	25.95	38.17
Not at all	60	0	40	16.67	16.67	66.67

While the relationship between education – of the respondent and her partner – on CPR and adoption of modern methods is generally expected to be positive (Gubhaju, 2009; Kamal, 2007; Kamal and Huda, 2008; Oyedokun, 2007; Zellner, 2003), some research suggests that education may not have any impact on contraceptive use (Howard and Powell, 2004; Koc, 2000). This includes in slum areas (Dutta and Husain, 2011). Table 4 does not reveal any clear relation between education (of respondent or her partner) and contraceptive use or adoption of modern methods.

The relationship between age and contraceptive use is non-linear. The proportion of users is low among currently married women in the 15-19 and 20-24 age groups, increases among older women, reaches a peak with women aged 30-39 years, and declines thereafter. Analysis reveals that fecundity related problems, hysterectomy and the attainment of menopause are the main reasons for low CPR in the 40-49 year age group. The relation between usage rates of modern contraceptives and age groups also displays an inverse u-shape.

The relation of number of living children is expected to be positively related with current contraceptive use and is supported by analysis. Another important determinant of contraceptive use is economic status. Respondents with higher values on the wealth index have a higher CPR. However, their usage of modern contraceptives exhibits an inverse u-shaped trend among slum-dwellers, and a negative relation among non-slum dwellers.

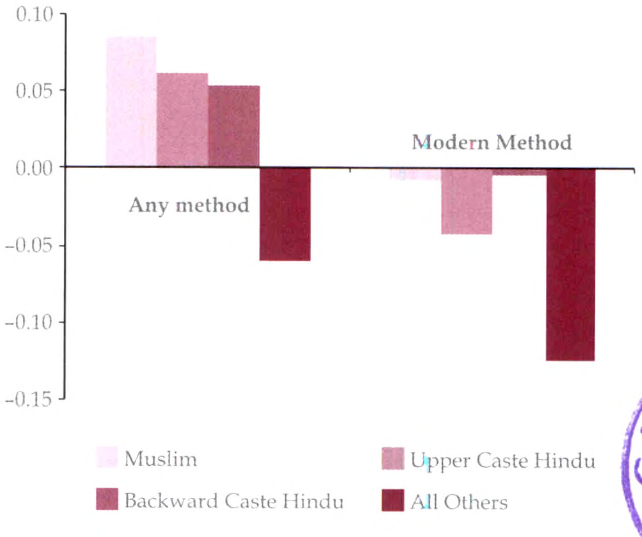
Working women tend to have higher CPR; they also tend to prefer modern methods. This is possibly because of the opportunity cost of withdrawing a pregnant family member from the workforce (Becker, 1965; Willis, 1973). What is interesting is that participation in economic activities has a more perceptible effect on contraceptive use among slum dwellers. This may reflect the fact that withdrawal of a pregnant woman from the workforce has a greater economic impact on the household in slum areas[13] (Char and others, 2009). In addition, there are also substantial differences in the occupational structure of slum and non-slum populations. A high proportion of the latter are engaged in the formal sector, which provides paid maternity leave or security of employment, is more comparatively responsive to the problems of pregnant workers and is less labour-intensive.

Apart from these socio-economic variables, empowerment has an important effect on fertility-related decisions (Badar and others, 2007). While the DHS-3 survey provides information on a host of empowerment indicators (like mobility, tolerance of domestic violence, participation in household decisions, among other things), we have used only one indicator that is directly related to the research issue – whether the respondent is allowed to go for health check-ups alone[14] (Chattopadhyay and others, 2004). Since more than half of the slum dwellers obtain contraceptives from Government clinics and hospitals, such mobility is an important determinant of contraceptive use. It can be seen that contraceptive prevalence rates are higher among women with greater mobility in this respect.

The analysis in this section can be summed up graphically using the modified Sopher Index employed earlier.

The graphs show that disparity in CPRs between slum and non-slum respondents across different socio-economic and demographic correlates is generally low (less than 0.20). Only among 15-19 year respondents, those with one or two children, respondents from the poorest economic class and those without the freedom to seek health care by themselves, do we find high levels of disparity. In fact, the value of the Index assumes a negative value for All Others, respondents with partner's having secondary level of education, women with 3-4 children and those with five or more children. If we consider adoption of modern methods, a negative value of the index is obtained for:

Figure 2. Disparity in CPR by Socio-religious communities



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a) all socio-religious communities,

b) non Hindi-Urdu speaking respondents,

c) respondents with primary and secondary levels of education,

d) women with partners having below secondary and higher secondary levels of education,

e) those aged 25-29 and aged 35 years and above,

f) women with 3 or more children,

g) respondents belonging to the middle and richest wealth index category,

h) both working and non-working respondents, and

i) women with partial freedom to seek health care.

4.3 Econometric analysis of the findings[15]

We had seen, in Section 4.1, that differences in CPR between slum and non-slum respondents were statistically significant. The discussion of Section 4.2 indicates that such differences may also be attributed to variations in the correlates of contraceptive use. So, it is necessary to undertake an analysis of differences in CPR by place of residence, and controlling for these correlates using an appropriate econometric method.

As mentioned earlier, the econometric analysis is based on an ordered logit model with the respondent assumed to face three choices - no use, traditional/folkloric methods and modern methods. The result of the Brant test (the χ^2 value, with 12 degrees of freedom, is 171.03, with a probability value < 0.00) indicates that the null hypothesis of proportional odds assumption is rejected. Allowing parameters to vary, enables an examination of the variations in impact of each variable *at different choice levels*. This provides a more sophisticated information set for policymaking. The variable parameters model may have alternate forms. Gamma parameterization helps to identify which of the coefficients violate the proportional odds assumption. Based on this results, both the partial proportional odds model and the generalized ordered logit model[16] (Daniel and others, 2008) are estimated. Now the former imposes constraints on some of the parameters, while the latter increases the complexity of the model and may result in negative probabilities. So we use the Likelihood Ratio (LR) tests to choose the most parsimonious (in the sense of least restrictive) model specification. The value of the LR ratio is 4.82 (with a probability value of 0.1854), so that the null hypothesis (the partial proportional odds model is nested in the variable parameter model) may be accepted. This implies that the former model is the parsimonious model in the present case.

The result of our econometric exercise is presented in table 5. The left panel presents the parameters for the choice set of traditional/folkloric methods versus no use, while the right panel is based on the choice set of modern methods versus all other options (no use and traditional/folkloric methods).

The objective of this paper was to examine whether there were significant differences in CPR between slum and non-slum areas. Though Sopher's Index has shown a low level of disparity in both overall use and adoption of modern contraceptive methods between slum and non-slum respondents, parametric and non-parametric tests have indicated that the difference was significant when overall use is considered. Econometric analysis confirmed the latter result.

Quite a few of the other explanatory variables - apart from place of residence - are significant. Both UCHs and Muslims have a lower probability of using contraceptives than BCHs. However, the odds ratio of Muslims is observed to improve when they are offered a choice of modern methods. Differences between BCHs and All others are marginal. Language (proxy for culture) exerts a significant effect on the decision to use a contraceptive, but not in choice of modern method. Education of the respondent is significant at the ten per cent level only in the left panel. Both age and its square have been incorporated in the regression model to reflect the non-linear relation between contraceptive use and age. Both coefficients are significant in the first choice situation, but not

Table 5. Results of generalized ordered logit model

Choices	**No use vs. Traditional/Folkloric method**		**No use & Traditional/Folkloric method vs. Modern method**	
Variables	**Odd ratio**	**z**	**Odd ratio**	**z**
Resident of non-slum areas (RC)	1		1	
Resident of slum areas	0.61**	- 3.32	0.82	- 1.53
Backward Caste Hindu (RC)	1		1	
Hindu Upper Caste	0.62**	- 2.84		
Muslim	0.31**	- 4.89	0.50**	- 3.16
All communities	0.63	- 1.24		
Hindi / Urdu speaking (RC)	1		1	
Bengali & other languages	1.60**	2.65	0.98	- 0.17
Education of partner	0.97	- 0.63		
Education of respondent	1.20*	1.83	1.09	1.01
Age	1.64**	7.53	1	0.07
Square of age	0.99**	- 8.7	1	- 0.98
No. of living sons	2.21**	9.85		
No. of living daughters	1.62**	6.66		
Log of Wealth Index Score	1.01	0.13		
Whether employed	1.11	0.79		
Not allowed to go alone for health checkups (RC)	1		1	
Allowed to go alone for health checkups (RC)	1.43	2.75		
No. of observations	**1 327**	**Pseudo R^2**		**0.12**
Wald Chi^2 (20)	**286.77**	**Log likelihood**		**- 1 248.1**

Note: Coefficients of parameters which do not vary across levels of choice have been stated only in the left panel. Coefficients significant at five per cent are indicated by ** and those at 10 per cent by *. RC denotes the reference category for categorical variables.

when modern methods are considered. Increases in number of living children encourage respondents to adopt contraceptives and modern methods. Comparison of the effects of birth of a boy or girl child reveals that number of living boys has a higher odd ratio, indicating that the birth of a son has a greater impact on adoption of contraceptive than the birth of a girl. This is consistent with the son preference observed in developing countries (Clark, 2000; Dutta and Husain, 2011; Roy and others, 2008; Jayaraman and others, 2009; Saha and Bairagi, 2007). Freedom for women to go for health check-ups on their own also has a significant impact on the adoption of contraceptive methods, including modern methods.

Though the score coefficients of wealth index and partner's education are statistically insignificant, this may be due to the presence of multicollinearity (both variables are highly correlated with respondents' education, with values of 0.65 and 0.55, respectively). The coefficient of participation in the labour market is also not significant. This may be because of the lack of employment opportunities for women residents of Calcutta[17] (Das and Shah, 2001).

5. Discussion and conclusions

The analysis in this paper reveals that, though the prevalence of modern methods in slums in Calcutta is not significantly different from non-slum areas, the overall proportion of non-users is significantly higher in slums. This implies that women living in slums are relatively reluctant to use contraceptives. In this context, it is necessary to appreciate the asymmetrical nature of family planning decisions and their implementation in patriarchal societies - in most cases women are not making the decision themselves, but relying on the husbands' choice[18] (D'Souza, 2003)

However, once their initial resistance to using contraceptives is overcome, slum-dwellers will accept - even prefer - modern methods. Their acceptance rates of modern methods are similar to that of their non-slum counterparts[19] (Dutta and Husain, 2011). The question then arises - how to overcome the initial reluctance of slum women to adopt family planning methods? This calls for an analysis of the magnitudes of coefficients in the regression analysis.

Econometric analysis of contraceptive use reveals that the education of the respondent and her freedom to seek medical advice have substantial effects on the probability of using contraceptives. The odd-ratio of mobility, in particular, is very high (1.43, at both levels). Education has a high odd ratio of 1.19 at the first level. This implies that education is important in lowering initial resistance to contraceptives. In this context, it should also be noted that 43 per cent of the current pregnancies among the slum population are unplanned (as opposed to 33 per cent among the non-slum population). This may indicate a lack of awareness about contraceptive choices (Orbeta, 2005) that should also be addressed in such communication programs - or even lack of empowerment with regard to fertility decisions. Another possible indirect effect of education is through an increase in empowerment. In this context it should be noted that freedom of the respondent to choose with respect to health check-ups has a positive effect on contraceptive use.

Other determinants of contraceptive use are culture-related. Non-Bengali migrants and Muslims are reluctant to adopt contraceptives.

The Government should therefore consider targeting these communities. Given the suspicion of the motivations guiding Government policy currently prevailing among migrants and, particularly, Muslim communities, such efforts should be based on culturally appropriate, community-based communication programs targeting youth and decision-makers (Daniel and others, 2008), rather than be imposed from outside. This would reduce the controversy emerging over issues, such as whether contraceptives are permissible.

It is, however, fertility preference which creates the greatest obstacle to the adoption of family planning methods. Preference for more children, particularly boys, reduces the demand for contraceptives. Whereas the birth of an additional female child would increase the probability of using (modern) contraceptives by 62 per cent, with a male child, the effect is almost doubled (121 per cent). Fertility preference remains the dominating variable if we run regressions for slum and non-slum women, separately. Values of the odd ratio for non-use versus use in the case of number of living sons are 2.31 and 2.25, respectively. Further, the difference in the coefficients is insignificant (as t-ratio is 0.17)[20] (Government of India, 2009). Thus, the impact of preference toward male children cuts across the slum and non-slum samples. This implies the persistence of patriarchal attitudes even within the modern metropolitan city of Calcutta. Economic forces may also be responsible. Males constitute the majority of workers in slum and non-slum areas. Within the Calcutta Municipal Corporation, males comprise 84.5 per cent of total workers and 85.5 per cent of main workers. Further, income earned by a girl will go to her matrimonial home. Therefore, the microeconomics of fertility decisions creates a strong son preference that acts as a barrier to contraceptive use. A comparison of odd ratios (table 5) implies that this factor is even more important than the residence of respondent, viz. whether she is a slum dweller or resides in non-slum areas.

Thus, geographical targeting of slum dwellers in family planning programmes is important, but not sufficient to increase contraceptive prevalence rates. Policies should attempt to tackle the son preference that is prevalent in all segments of society. This issue can be addressed in two ways – by changing attitudes and by reducing differential returns between having a boy and a girl child. Attitudes may change through disseminating information about the advantages of a small family, the dangers of repeated pregnancies and the destructive impact of the dowry system – particularly among male members, who are generally the decision-makers within the family (Char et al., 2009). Simultaneously, the role of schemes such as Swarna Jayanti Sahari Swarojgar Yojana, Pradhan Mantri Rojgar Yojana, as well as others that encourage the involvement of women in economic activities, are also important in increasing opportunity costs of pregnancies and, therefore, in encouraging contraceptive use.

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END NOTES

1 Census data shows that the decadal growth rates for 1981-1991, 1991-2001 and 2001-2011 are 23.8 per cent, 21.6 per cent and 17.64 per cent, respectively.

2 According to results of the latest Demographic Health Survey (DHS) survey (2005-2006) the contraceptive prevalence rate in India is 56 per cent among currently married women, as opposed to the global average of 63 per cent.

3 Unwanted/unplanned fertility or births refer to pregnancies or births that were not wanted or planned at the time of conception (Hayford and Guzzo, 2010: 366). DHS-3 data reveals that 57 per cent of women with more than three children state their ideal family size is less than three. This may be taken to be an indication of unwanted fertility. More specifically, 21 per cent of live births were unplanned.

4 For instance, UN-HABITAT states that "A slum is a continuous settlement where the inhabitants are characterized as having inadequate housing and basic services. A slum is often not recognized and addressed by public authorities as an integral or equal part of the city." (cited in GOI, 2010: 3).

5 A recent study (Dutta and Husain, 2011) found contraceptive prevalence levels in Calcutta's slums to be higher than in other metropolitan cities of India.

6 Literacy levels are 66 and 60 per cent among total and female population, respectively. According to Census 2001 reports, 37 per cent of the total population (and 12 per cent of female population) is employed; most of the workers are marginal workers (91 per cent of total workers and 92 per cent of female workers).

7 Earlier DHS surveys were carried out in 1992-1993 (National Family Health Survey-1) and 1998-1999 (National Family Health Survey-2).

8 *Folkloric methods* consist of locally described or spiritual methods believed popularly to reduce fertility, but of unproven effectiveness. Such methods consist of herbs, amulets, gris-gris, etc. *Traditional methods* consist of fertility preventing methods of proven effectiveness, like rhythm (or calendar) and withdrawal (*coitus interruptus*) methods. *Modern contraceptive methods* include all hormonal methods (i.e., the pill, injectibles and implants), IUDs, male and female sterilization, condoms and modern vaginal methods (e.g., the diaphragm and spermicides).

9 About 10 per cent of slum-dwellers do not use contraceptives because they do not undertake intercourse at all or do infrequently. These are also common reasons for not using family planning methods by non-slum-dwellers; further, the incidence of hysterectomy or menopause is higher among this group. Interestingly, culture or religion is not important in explaining non-use by Calcutta slum-dwellers. Only one out of every hundred non-users face opposition by husbands; a similar proportion are reluctant to use contraceptives due to religious prohibitions.

10 The additive monotonicity axiom specifies that if a constant is added to all observations in a non-negative series, ceteris paribus, the inequality index must report a decline.

11 Adoption rates, however, have been faster within Muslims than among other communities (Alagarajan and Kulkarni, 2008).

[12] On the other hand, the Hindi and Urdu speaking community are mostly migrants, residing away from their extended families and therefore more likely to be free of the family pressure to have more children. This effect may be significant if a large proportion of the Hindi and Urdu speaking community are first generation migrants, residing away from their extended families. However, the DHS dataset reveals that 48 per cent of the Hindi and Urdu speaking community are permanent residents of the city, while 69 per cent are residing here for over 15 years (so that a extended family may have grown up). Hence it is unlikely that this effect plays an important role in shaping contraceptive decisions of the Hindi and Urdu speaking community.

[13] This may be attributed to two reasons - low family income and low savings to compensate for the temporary withdrawal.

[14] Data reveals that while 66 per cent of slum-dwellers are allowed to go for health check-ups alone, this proportion is 74 per cent among the non-slum population.

[15] The analysis uses modules developed by Long and Freese (www.indiana.edu/~jslsoc/stata/) and Williams (http://fmwww.bc.edu/repec/bocode/g/gologit2_p.ado).

[16] This may be interpreted as a set of logistic equations (Williams, 2005).

[17] Census figures reported that only 12 per cent of the female population in Calcutta slums are in work. DHS data shows that only 23 per cent of slum-dwellers work throughout the year; this figure is 24 per cent for the non-slum group.

[18] As researchers point out, though it is the women who implement decisions relating to adoption of contraceptives, opposition from the male partner can thwart aspirations of the female (Speizer et al., 2005). Such opposition may arise because of the apprehension that allowing women freedom to make reproductive decisions will: [a] erode the authority of the male partner within the family, [b] encourage the wife to be unfaithful, or [c] lose face within the community (Bawah et al., 1999; Watkins et al., 1997). It is also pointed out that even if contraceptive use is approved in theory, it may be disapproved in practice (Blanc, 2001) – reflected in the refusal to use male condoms. In some instances, women have been documented to have made covert use of contraceptives; this exposes women to violence if found out by their male partners.

[19] Further, analysis of the specific modern methods of family planning used reveals a surprisingly high incidence of female sterilization among slum-dwellers (62 per cent), followed by use of condoms and pills (incidence of both are 17 per cent). While non-slum-dwellers also exhibit a similar pattern (50, 24 and 22 per cent, respectively), the incidence of sterilization is about 12 percentage points below that of slum-dwellers. This calls for research into the reasons for sterilization, particularly among slum-dwellers, as this method is terminal and is less preferable to reversible methods like condoms and pills, allowing freedom in birth spacing.

[20] In the case of number of living daughters, odd ratios are 1.31 and 1.90 for the two groups, respectively. The difference, in this case, is statistically significant (t-ratio of 2.79).

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Mobility as Development Strategy: the case of the Pacific Islands

Migration is often portrayed in terms of net gain or loss in which remittances provide compensation for those States or territories which are seen as disadvantaged in the competition for especially skilled workers. In the Pacific region, this dichotomy is illustrated through the loss for countries of origin (Pacific Island countries and territories) of their "best and brightest" to the region's larger and more prosperous States. This has occurred to such an extent that many see the limited development gains made by small island States and territories in the post World War Two period as being, for the most part, explained by the failure to counter the resulting inequalities in both "brain drain" and "brain gain". This article argues, though, that such a dichotomy misses those shared development gains reaped through increased labour mobility. Indeed, migration can underpin a "development dividend" for the region through the enhancement of increased mobility, including for low-skilled workers. Recent schemes have sought to balance both migration opportunities and development needs. While these are promising, much more could be done to support the conditions in which Pacific Islanders of all socio-economic status can circulate.

By Donovan Storey and Vanessa Steinmayer*

Introduction

In the post-war period, migration has been an increasingly important part of individual, family and national livelihood decisions and development strategies. Whether for education, employment, or other opportunities, the movement of people has been a means by which relatively poorer populations have accessed resources for survival and advancement. Though international migrants remain constant as a percentage of world population, their numbers increased from 150 million in 2000 to 214 million persons in 2010 (UN-DESA, 2011; IOM, 2010). This has been matched by a substantial increase in remittances, estimated to have been $440 billion in 2010 (of which over 70% is remitted to developing countries) but significantly undercounted, reflecting the perseverance of informal channels of transaction (World Bank, 2011). To put this into perspective, annual global remittances now represent greater and more stable transfers than either international development aid or, for many countries, foreign direct investment (FDI) (de Haas, 2005; Sharma et. al, 2011).

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The focus on migration has alternated between the endorsement of regional and global flows of people, information and resources, and apprehension about its impacts resulting in restrictive policies to curb movement. For countries of destination, concern has often focused on the implications of unregulated labour inflow for domestic citizens' employment opportunities as well as the social impact of large numbers of foreign nationals (Storey et. al, 2010). This is balanced by the desire for a greater number of especially skilled workers in light of falling domestic birth rates, diminishing working-age skilled labour and high wage rates relative to profit.

Countries of origin, on the other hand, have also attempted to balance the pros and cons of emigration, though they have exerted less influence on the process overall. On one hand, emigration may offer a safety valve of sorts, providing employment opportunities abroad. On the other hand, the loss of labour, both skilled and un-skilled, presents problems in terms of the loss of human capital, especially young and working-age citizens who would otherwise contribute to the strengthening of national development (OECD, 2002; United Nations, 2006). Paradoxically, this tends to reinforce many of the reasons why many people migrate in the first place, such as in response to relative inequalities in opportunity (especially income) and in an effort to seek access to higher quality education and health services (Connell, 2010: 120). Migration though is more often than not a middle-class phenomenon. Indeed, the cost of migration often precludes the poorest of the poor. Surveys from several countries have shown that the majority of migrants actually had a job before migrating, and through migration were looking for a better paid job opportunity rather than employment in and of itself.

For some, the loss of population and human resources is offset through remittances, which make an important contribution to economies as large as the Philippines to micro-States such as Tuvalu. However, balancing the losses against the gains is an imprecise calculation and subject to much debate (Nyberg-Sorensen et.al, 2002; de Haas, 2005). For several countries in Asia and the Pacific, remittances have become the most important and most stable source of foreign income, exceeding foreign direct investment (FDI), official development assistance (ODA), and, in some cases, even export revenues. Migration is especially important for least developed countries (LDCs) and landlocked developing countries (LLDCs) as well as small island developing States (SIDS), because of their limited productive capacities and inadequate income opportunities. For Pacific Island countries, which face multiple vulnerabilities due to their small size and remoteness, which limit the creation of productive capacities, migration can be a viable development option (Christensen and Mertz, 2010; IOM, 2005).

The competition among States for skilled and even unskilled labour appears to be increasing, a situation which is likely to be exacerbated as more developed countries experience a demographic transition to older populations. Countries of destination are therefore likely to be less concerned with the impacts of human resource loss in countries of origin as competition for "knowledge" workers intensifies (Iredale et. al, 2003: 181). Yet there are opportunities for what Ramasamy and others (2008) have referred to as a "triple win" scenario – for migrants, countries of destination, and countries of origin. This article explores the opportunities for such outcomes in the context of Pacific Island migrants and recent efforts to create new and viable channels for migration that are both "pro-poor" and "pro-development".

Migration, remittances and development in the Pacific

Debates about the relationship between migration, remittances, human capital and development are especially critical for Pacific Island countries (PICs) because of their limited human capital, high rates of emigration and tenuous economic base (World Bank, 2006). Migration is central to many Pacific Island economies and societies – and has been for a number of centuries. For some States and territories, migration and remittances have been critical to island survival and around which development patterns and processes have depended. The principal destinations for migrants from PICs are Australia, New Zealand and the United States of America, but there are also notable migration flows within Pacific Island countries (Hayes 2010). Indeed, Barcham and others (2009) have referred to Polynesian migration as both "multidimensional and multidirectional" and always subject to adjustment and a recalculation of costs and benefits. Bertram and Watters (1985) have even argued that Pacific migration patterns represent the creation of "transnational corporations of kin", reflecting both the global nature of Pacific Island movements but also the continued affinity with "home".

In the case of Polynesia, especially, a "culture of migration" has been established and emigration is seen as normal, expected and anticipated and in which islands and some States have become "deterritorialized" (Borovnik, 2003; Connell, 2003:43; Connell, 2010: 116).

The legacy of migration has been uneven for the Pacific Island States. Migration has created clear human resource deficits – especially among professionals in education and health (Voigt-Graf et. al, 2007; Connell, 2009). But, it is equally seen as a solution - in terms of acting as a population valve for Samoa and Tonga from the 1960s and offering opportunities for those with little chance of finding formal sector jobs. In the mid-1980s more than 1,900 Tongans were leaving Tonga each year, cutting the annual population growth from 2.3 per cent to 0.3 per cent and creating substantial expatriate populations in Pacific-rim countries (Small and Dixon, 2004:1) (see Table 1). Migration also provides greater potential employment opportunities for many Pacific Islanders, in a region where thousands of school leavers annually contest for a limited number of jobs. Recent literature has also sought to link migration opportunities with decreasing conflict in the region (Ware, 2007).

Table 1. Pacific Island ethnicities in New Zealand and populations of respective countries at home: 1991, 1996, 2001, 2006

Pacific ethnicity	**Total number resident in New Zealand - census year**				**Country population (2011)**
	1991	**1996**	**2001**	**2006**	
Samoan	85 743	101 754	115 017	131 103	184 000
Cook Islands Maori	37 857	47 016	52 569	58 011	20 000
Tongan	23 175	31 392	40 716	50 478	105 000
Niuean	14 427	18 474	20 148	22 476	1 000
Fijian	5 097	7 698	7 041	9 864	852 000
Tokelauan	4 146	4 917	6 204	6 819	1 205
Tuvaluan	432	879	1 965	2 628	11 000
Other Pacific peoples	2 190	4 440	5 424	6 378	
Total Pacific peoples	167 070	202 233	231 798	265 974	

Source: Statistics New Zealand (2011a), http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/quickstats-about-a-subject/pacific-peoples.aspx; ESCAP Population Datasheet; for Tokelau: Statistics New Zealand New Zealand 2011b.

Pacific Islanders choose to migrate for a number of reasons. "Migration in the Pacific is primarily a response to real and perceived inequalities in socio-economic opportunities that have resulted from uneven development. Social influences on migration are important especially in terms of access to education and health services but also as one element of the transition to adulthood; such social influences are in turn often a function of economic issues" (Connell and Brown, 2005:viii). In large part, migration is seen as the most likely path to socio-economic advancement, particularly for youth (Morton Lee, 2003; Ware, 2007). But migration is also seen as more lucrative and preferential than alternative prospects at home, notably in agriculture. Though primarily understood in these economic terms, Pacific migration also includes other important flows – of goods, ideas, skills and culture – which both adapts and responds to opportunities and change (Barcham *et. al*, 2009: 99).

It is remittances which are often seen as the primary "return" for the loss of domestic populations. For Micronesia and Polynesia especially, it is migration and remittances which keep many economies afloat. In the case of Samoa and Tonga, the most emigration/remittance dependent economies in the Pacific subregion, remittances amounted to 25 per cent and 24 per cent respectively of GDP in 2010 (World Bank 2011). According to a study undertaken in Tonga, about 75 per cent of all households received remittances in cash and/or material goods (Small and Dixon, 2004:2). In some villages in Samoa 80-90 per cent of villagers receive remittances (Connell and Brown, 2005:10). Connell and Brown (2005:21) have estimated that the average Tongan migrant in 1994 remitted US$2,043 per annum, and the average Samoan migrant remitted US$789. This not only represented between 5.3-13.1 per cent of income but constituted a significant source of wealth for countries with a per capita income of around US$2,000.

Even these figures may seriously undervalue the sum and flow of remittances. Brown (1995) has estimated that *unrecorded* remittances from Australia amounted to as much as 34-41 per cent of the total for Tonga and 42-60 per cent for Samoa. Only rough estimates can be made with regard to remittances in kind, in the form of food, second-hand clothes, blankets, sheets, utensils and even cars. These goods have contributed to the development of markets for second hand goods, the most significant of which thrives in Nuku'alofa (Connell and Brown, 2005:15). Indeed, Lee (2004) has found that second and third generation Tongan migrants may be more likely to remit gifts than money, again indicating the complexity and richness of transnational relationships over time and space.

It has been argued, on one hand, that remittance dependence at the household level contributes to: a lack of productive activities, small business failure and lagging growth rates creating a "free-rider" effect; lessening motivations to work, especially in physically demanding occupations such as agriculture; and leading to a consumption-based society and economy (World Bank, 1990). On the other hand, authors such as Ellis (2003) and Brown (2008) have argued that such positions tend to be overly negative and fail to recognise the positive links between migration, remittances and development. The counter-argument on remittances would include a positive link between remittances, education and multiplier effects through the economy (particularly in construction and services); a positive relationship between emigration and trading links between communities in different countries; and that remittances are increasingly seen as a key part of poverty alleviation and increased livelihood options as well as reducing vulnerability.

Indeed, despite high levels of remittances Tongan farmers responded rapidly to the opportunities generated by the "squash boom" of the 1990s (Storey and Murray, 2001). Fijians and Ni-Vanautu responded strongly to opportunities through higher-priced kava exports in the 1990s; Samoans to eco-tourism; Papua New Guineans to coffee; and Fijian entrepreneurs to the garment industry, which evolved through bilateral trade agreements with Australasia (Storey, 2006). These examples demonstrate that when private sector-led development opportunities arise in the region they are grasped upon. These effects have also been shown for other countries in the Asia-Pacific region, such as Bangladesh, India and Pakistan (Rajan and Zachariah 2007, IOM 2009, Arif 2010).

Literature has extensively discussed why migrants remit. Remittance motives range from pure altruism to strategic motives whereby migrants remit to maintain family ties for their return. Indeed, remittances may be described as a form of "impure altruism" (Brown and Poirine, 2005). At least in initial years they represent a repayment for past investment in their human capital development through education. This has been referred to by Poirine as an "implicit family loan agreement" (Poirine, 1997). While some see the "culture of remittances" as relatively changeless there is evidence of a much more dynamic approach to, and use of remittances. In particular it is clear that the use of remittances changes according to opportunities once basic needs are met. "Where there are opportunities and where consumption goals have been satisfied, remittances are used for investment, to stimulate entrepreneurial and trading activity, to increase formal sector employment, and to produce multiplier effects" (Connell and Brown, 2005:34). Remittances can thus be used as an investment, for example when they are used to build a house or to start a business (Rapoport and Docquier 2005). This is evident in the growth of cafes in many Pacific Island cities and towns which are clearly modelled upon businesses that are more "at home" in Sydney, Wellington or Los Angeles.

Goods also flow the other way through large expatriate populations abroad. In what has been termed "the economy of affection" *koloa* (traditional wealth), in the form of weaved mats and handicrafts, has developed into a serious and significant industry in several Pacific island countries (APMRN, 2001). Particularly for women, it has become a form of enterprise and income (James, 1997). The evolution of a flower market and associated skills in Samoa has also been attributed to connections to overseas markets, tourism from returning migrants (Scheyvens, 2007), and returning migrant's expertise and capital (Underhill-Sem 2001). Through migration, and the spread of Pacific island diasporas, markets are also being created for island produce, such as kava and taro. Such activities represent at times significant forms of local development and entrepreneurship.

Looking more closely: a Pacific Island "brain drain" or a "brain dividend"?

An often raised concern is that emigration will lead to long-term losses of skilled workers, the so-called brain drain, or in some cases even depopulation. While this has been the case particularly in health and education (Naidu, 1997; Brown and Connell, 2004, Connell, 2007), and often a reflection of the targetting of skilled migrants by developed countries in the region and beyond, Pacific Island countries still have high fertility rates and relatively high ratios of population either in or entering working age (UN-DESA, 2011). Many Pacific island countries do face difficulties in terms of limited productive capacities, few opportunities to harness economies of scale and restricted access to markets due to extreme remoteness. Employment creation then is a significant challenge, and will remain so for the foreseeable future.

Migration is one way for Pacific Island countries to harness their "demographic dividend", that is the period in which fertility and youth dependency rates fall resulting in a greater number of the population in the workforce. However, given that opportunities for employment are restricted in much of the Pacific, such a window of opportunity may not realise the levels of income required to invest in productive capacity and activity. Migration and remittances provide the capacity to fill these voids creating a diaspora-based demographic dividend. Indeed, several authors have noted the high level of human development in some parts of the region relative to income – in no small part this can be attributed to the opportunity to migrate.

Even when jobs are secured "at home", for a comparative position overseas, workers can earn several times the salary (Small and Dixon, 2004:3). In many sectors, the greater the skill level the less likely the chance of domestic employment, thus creating a potential disincentive for families to invest in education. The Austrailian Agency for International Development AUSAID (1995) has thus suggested that the problem is not just a "brain drain" but a "brain overflow". Consequently, policies or attitudes, which merely try to keep people at home, or "lock up" labour (even if it were possible) may actually be counter-productive to national development. There may be a high opportunity-cost, at both a personal and national level, of "staying-put" (Kothari, 2003).

On a similar note Poirine (1998:77) has noted that, despite the economic side effects of emigration, it remains a perfectly rational choice for many given the relative returns on their educational investment. Consequently he questions whether the crowding-out effects of remittances and aid on "traditional" productive activity is a distortion in resource allocation, instead concluding that:

> What would really be a "bad" allocation of resources, a "waste" of human resources, would be to force bright young Tongans and Samoans to work at home with their parents growing taro or gathering copra, rather than getting a good education and migrating to Australia, New Zealand, or Hawai'i and sending remittances to their parents.

The limits of "bringing people back home"

Given the factors discussed above, it is no surprise that efforts to encourage migrants to permanently return "home" have proved relatively unsuccessful. Hopes of a substantial return of human and financial capital to home islands might then be unfounded. Skilled migrants are often reluctant to return home because of the loss of professional contacts and a feeling of isolation from their profession. In surveys, Tongan migrants have cited allowing dual citizenship as well as improving career opportunities and merit-based employment as initiative which would encourage them to return (Gibson and McKenzie, 2011a: 28). Those who have returned feel "hampered by overly bureaucratic environments, poor equipment and working conditions" and "a level of frustration that may in the future lead to re-migration" (Iredale, *et. al*, 2003:185). A study by Ahlburg and Brown (1998) of Tongans and Samoans, also showed that very few intended to return home and that those more likely to return were not those with significant levels of education, experience and skills.

Rather than seeing migration as a permanent and negative loss, or the solution being a lasting return, greater attention is being paid to the creation of conditions whereby skilled and un-skilled migrants can more freely circulate. Iredale and others (2003) have referred to this as reaching a third sustainable stage of inflow/outflow with the earlier stages being characterised by a net loss and the feared "brain drain".

Indeed, such a position borrows from the perspectives of Pacific Islanders themselves. Asinate Liki (2001) has suggested that the linear "brain drain" thesis is essentially a Eurocentric concept of migration, and the

Samoan concept of "*aiga*" (extended family) is better suited to complex flows, which are not well captured by official data. Arguably, this would encourage what many Pacific Islanders see as a natural movement around the region, and increasingly the globe, reflecting also what Hooper (2000) has referred to as the extension of the social boundaries of the modern village across space. Return migration, or greater circularity, is also seen as benefiting developed countries in terms of buttressing declining workforce populations and mitigating the impacts of demographic transition.

Temporary migration programs are increasingly seen in the region as an effective strategy for spreading benefits and reflecting the above positions. While they are not necessarily new – the "Fijian scheme" of unskilled workers spending limited time in New Zealand and subsequently returning to their villages with capital to aid in village development lasted from the 1950s to 1987 (Levik and Bedford, 1988) – there have, in recent years, been two notable policy innovations in promoting short-term work schemes for unskilled Pacific Islanders. Though innovations remain at a small scale (in Australia the scheme is still at a "pilot"stage) they are worthy of greater policy attention.

New Zealand initiated the Recognized Employer Scheme (RSE) in 2007, with an annual quota of between 5,000-8,000 workers (New Zealand Department of Labour, 2011). Of note, to date the majority of workers have originated from Vanuatu, which has not shared a migration history with New Zealand. The initial impacts of the scheme have been significant. Gibson and McKenzie (2011b: 368) have estimated that the scheme generated a net financial benefit for both Vanuatu and Tonga of around 50 per cent of total bilateral annual New Zealand aid to those countries in the first two years of the RSE. Vanuatu's net benefit of A$8 million was equivalent to 20 per cent of the country's total annual export earnings. Though it was not the poorest households who generally applied to enter the scheme (Gibson and MacKenzie, 2011b), the RSE has provided a clear counterbalance to previous biases towards skilled and professional migrants.

The Australian scheme – the Pacific Seasonal Worker Pilot Scheme (PSWPS) – is more recent (it was initiated in 2008) and to date more modest in scale (MacDermott and Opeskin, 2010). It has a total quota of 2,500 workers over four years. As with New Zealand's RSE, the PSWPS was instigated to both serve the needs of rural employers struggling to attract sufficient seasonal labour, and "to contribute to economic development in Pacific countries" (Department of Immigration and Citizenship, 2011). To date, only 731 workers have entered the scheme (as of October 2011), and the vast majority have been from Tonga – a country with a long tradition of migration. National impact has been quite limited as a result, yet Gibson and Mckenzie (2011b: 368) have estimated a contribution of A$343,000 to the Tongan economy – a likely significant impact at the household and village level. With a relaxation of the requirements for participating in the scheme – for both employers and migrants – the future impact may be much greater.

Towards mobility as a development strategy: implications for policy

Migration continues to be an important part of the globalization of Pacific Island populations. While emigration is often viewed as a loss of productive labour, it also has to be questioned whether countries of origin, such as small island developing states, are able to create enough jobs to make productive use of the labour force in the short to medium term. Migration may be a way to harness a 'demographic dividend' into a "development dividend".

Migration and remittances have played an important role for most Pacific Island countries for a number of years and will continue to do so. While remittance-based economies received significant criticism in the early 1990s, recent research is indicating the importance of people and capital flows in alleviating poverty, broadening livelihoods and contributing to development. One World Bank study (2004) found that a ten per cent increase in labour mobility from a developing country will produce nearly a two per cent decline in the number of people living on less than a dollar a day. Indeed, those individuals and communities that are "left behind" and depend upon state-based initiatives appear disadvantaged in comparison to families and communities with access to migration/remittance channels.

Significant attention is now coalescing around ways to benefit from return migration, either permanent or temporary. Yet migration is not a "development panacea" and a judicious combination of policies is needed to effectively maximise the "migration-development nexus" (Datta, 2009; Hugo, 2009; Woolford, 2009). This must be based upon a reciprocal relationship and set of benefits for both countries of origin and destination. Indeed, as de Hass (2005: 1281) has summarized "a more fruitful approach would be to create an attractive social, economic and political environment that will encourage migrants to remain involved in their home countries, to return and circulate, and to make social and economic investments".

Remittances remain more financially significant than development assistance in the region. Remittances have played an important part in alleviating poverty, broadening livelihoods and attaining generally high levels of education in some parts of the region (even if this is to create "mobile human capital" for further emigration). Relatively high human development indices in the region can be related to resources attained through family members emigrating and sending home remittances. Remittances continue to act as a crucial safety net throughout the region and play an important role in income redistribution.

While hope is placed on the return of skilled migrants and reintegration into home countries, the actual number of permanently returning migrants is limited. They face considerable challenges in social and economic reintegration and few policies exist to assist this group to maximize experiences and skills. To realise the benefits of migration, it is not only important to move away from a "stay" or "go" dichotomy but also to increase the opportunities for low-skilled and poorer workers to migrate, and circulate. Recent schemes in the region have sought to balance both migration opportunities and development needs to create a "win-win" outcome for countries of origin, destination and migrants themselves. While these schemes are promising, much more can be done to support the conditions in which Pacific islanders can "circulate" – as they have successfully done for centuries.

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